THE SCOTTISH GLASS INDUSTRY 1610-1750

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Thesis presented for the degree of Doctor of Philosophy

University of Edinburgh

1999

For Gael

ACKNOWLEDGEMENTS

I am particularly grateful to Professor Michael Lynch and to Dr. Alexander Murdoch for their advice and guidance during the course of this research. The friendly and supportive atmosphere at all levels of the Scottish History Department has helped enormously in making part-time postgraduate study there a pleasure.

The staff of the National Archives of Scotland, the National Library of Scotland, including the map library, the Edinburgh City Archives, Edinburgh University Library Special Collection and the Royal Commission on the Ancient and Historical Monuments of Scotland have been unfailingly patient and helpful. I should like to thank them all. I m also grateful to the owners of Hopetoun House, to the Bank of Scotland, the Royal Bank of Scotland, The Goldsmith's Company and the History of Parliament Trust for permission to consult their records.

A grant from the Society of Antiquaries of Scotland enabled me to undertake research in Newcastle, Durham and London and is gratefully acknowledged.

My special thanks are due to David Crossley, George Dalgleish, Andrew Hannam, Hazel Horn, Jean Jones, Sue Mowat, Robin Murdoch and Fiona Watson for their help with particular aspects of this research.

Above all, I am especially grateful to Sheila Forbes and George Haggarty, who have never failed to be positively interested, helpful and encouraging. Their support, enthusiasm and assistance has been invaluable and is greatly appreciated. Finally, I want to thank my husband Gael for his unflagging interest, patience, support and encouragement throughout the frustrations and delights of preparing this thesis.

DECLARATION

I certify that this thesis has been composed by me, that the work is entirely my own, and that no part of the thesis has been published in its present form.

Jill Turnbull

ABSTRACT

Very little information about the early Scottish glass industry is available in secondary sources, and what has been written implies, incorrectly, that it was in existence for only short periods before the mid-eighteenth century. The industry was founded in 1610, under a patent to make iron and glass, granted to Sir George Hay, later first earl of Kinnoull and Chancellor of Scotland. Thanks to the politics surrounding the English glass monopoly and Hay's powerful position, the industry thrived and Scotland was deemed to be self-sufficient in glass only eleven years later. The Italian workforce responsible for this success left in 1646, but despite all the many upheavals of the seventeenth century, glass continued to be made at various sites. This thesis will show that, albeit on a small scale and with difficulty, glassmaking did, in fact, persist throughout the period 1610 to 1750, with the probable exception of two small breaks.

For the general reader, methods of manufacturing and some technical details are explained, together with an analysis of the ownership of glass in the seventeenth century. The main narrative describes the chronological history of each known glassworks, as thoroughly as extant material permits. Most of the sites were on the east coast of Scotland, at Morison's Haven, Westpans, Leith, Port Seton, Wemyss and Kirkcaldy, but a glassworks also operated at Glasgow from 1700. All required the recruitment of skilled workers from England. The entrepreneurs responsible for funding and managing the glassworks have been traced, and include Scottish aristocrats, members of parliament and men involved with the Charitable Corporation and the York Buildings Company.

Some insight is also given into the commercial practices of the late seventeenth and early eighteenth centuries, particularly the emergence of joint-stock companies and the gradual development of practical business methods. By the end of the period, the commercial infra-structure was in place to facilitate future industrial expansion and a new generation of glassworks was ready to take advantage of expanding trading opportunities and the increasingly affluent domestic market.

The aim of this thesis is to enable re-assessment of the perceived position of the glass industry and to suggest that, although small and of minor significance compared with the salt or woollen industries, it deserves wider recognition as the earliest and most

persistent of the manufactories introduced to Scotland through the policies of the Scottish parliament and privy council in the seventeenth century. It ends with a review of the glasshouse sites in 1999, in the hope that some archaeological investigation may one day be possible.

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MAPS AND ILLUSTRATIONS

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ABBREVIATIONS AND CONVENTIONS

APC	*Acts of the Privy Council of England*, 39 vols., (London, 1890-1938).
APS	*The Acts of the Parliaments of Scotland 1124-1701*, 12 vols., eds. T. Thomson and C. Innes (Edinburgh, 1814-75).
BOS	Bank of Scotland.
CSPD	*Calendar of State Papers, Domestic,* James I; Charles I. (London, 1857-1897).
DNB	*Dictionary of National Biography*, 22 vols, ed. S. Lee, (London, 1908-9).
ECA	Edinburgh City Archives.
Edin. Burgs.	*Roll of Edinburgh Burgesses 1406-1700*, ed. C.B.B. Watson (SRS, 1929).
Edin. Recs.	*Extracts from the Records of the Burgh of Edinburgh 1518-1716*, 12 vols., eds. J.D. Marwick, M. Wood and H. Armet (Edinburgh, 1871-1971).
EUL	Edinburgh University Library.
Glas. Burgs.	*The Burgesses and Guild Brethren of Glasgow 1573-1750; 1715-1935*, ed. J.R. Anderson (SRS, 1925, 1935).
HMC	Historic Manuscripts Commission.
IGI	International Genealogy Index.
JGS	*Journal of the Glass Society.*
JSGT	*Journal of the Society of Glass Technology.*
ML	Mitchell Library, Glasgow.
NAS	National Archives of Scotland. (Formerly Scottish Record Office).
NLS	National Library of Scotland.
NRA(S)	National Register of Archives (Scotland).

NRO	Northumberland Record Office.
OPR	Old Parish Records.
OS	Ordnance Survey.
PMA	*Post Medieval Archaeology.*
PSAS	*Proceedings of the Society of Antiquaries of Scotland.*
PRO	Public Record Office, Kew.
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland.
RMS	*Registrum Magni Sigilli Regum Scotorum*, 12 vols., eds. T. Thomson and others (Edinburgh, 1814-1914).
RPCS	*Register of the Privy Council of Scotland 1545-1689*, eds. J.H. Burton, D. Masson, P. Hume Brown, H. Paton, (Edinburgh, 1877-1933).
SHR	*Scottish Historical Review.*
SHS	Scottish History Society.
SBRS	Scottish Burgh Record Society.
SRS	Scottish Record Society.
WRH	West Register House, Edinburgh.
YBC	York Buildings Company.

All sums of money are in £Scots unless otherwise stated.

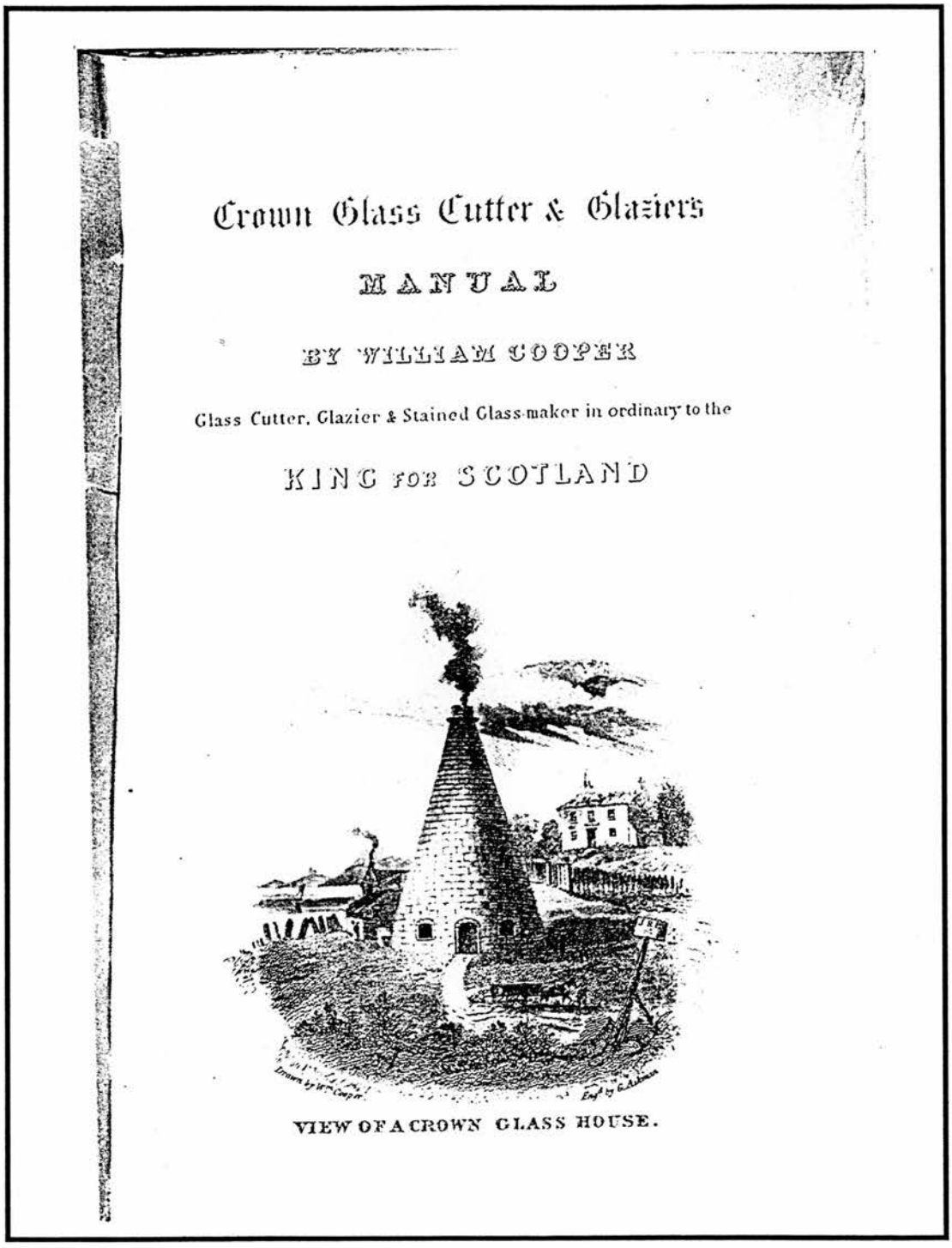
For the purposes of this thesis it will be assumed that £1 sterling = £12 Scots;
1 merk = 13s 4d.

Capacity measures. (to two decimal points). Common bottle sizes are in capitals.

Scots	Imperial
1 gill	.75 gill
4 gills = 1 MUTCHKIN	3 gills
2 mutchkins = 1 CHOPIN	1.5 pints
2 chopins = 1 PINT	3 pints
8 pints = 1 gallon = 1 QUART	3 gallons .25 gills

(Source: *The Concise Scots Dictionary*, ed. M. Robinson, (Aberdeen, 1985), 532; 818.

The year will be assumed to begin on 1 January. English dates have been adjusted accordingly.



Frontispiece from *Crown Glass Cutter & Glazier's Manual* by William Cooper (Edinburgh 1835)

INTRODUCTION

The aim of this thesis is to set down, in as much detail as possible, the history of the various glassworks operating in Scotland, from the date of Sir George Hay's patent in 1610, to the mid-eighteenth century, by which time glass production, particularly bottle making, was a well established industry. Glass-making was among the earliest manufacturing industries to be set up in Scotland, but one about which very little information has been published. It was also one of the most resilient and persistent of the early manufactures; it continued, albeit on a small scale, with very few breaks throughout the period studied, unlike many of the other early industries.

Because most readers are unlikely to be familiar with technical aspects of glass production in the seventeenth century, the first chapter attempts to provide sufficient explanation to make the later text more comprehensible. The terminology is further explained in a glossary. In order to establish some aspects of the background, against which the glass industry in Scotland was founded, pre-Union commercial practices and patterns of consumption are then explored. The commerce of the post-Union period is also discussed later in the thesis. Each of the subsequent chapters describes chronologically the glassworks connected with a specific site: Loch Maree, Morison's Haven, Wemyss, Westpans, Leith, Port Seton, Kirkcaldy, and Glasgow.

There is a paradox inherent in constructing such a history from extant documentary material, as the volume of paperwork is often in inverse proportion to the efficiency of the business it concerns, since it is generally related to problems experienced by the owners and management. The Glasgow bottleworks, which was built in 1701 by three merchants and was producing bottles on the same site, with the original partnership agreement still extant, forty years later, has left little evidence. Not even a formal tack was written until 1742. In contrast, the Morison's Haven glassworks suffered from mis-management, disagreements and financial difficulties, leaving behind a wide variety of records, many of them related to legal proceedings. As a result it has been possible to write only little about Glasgow, but a great deal about Morison's Haven. It should, therefore, be borne in mind throughout this thesis that the volume of material presented bears no relation to the relative significance of the establishments discussed.

A further constraint, which inevitably distorts the record, is access to archival material. The name of Wemyss is, for most glass historians, synonymous with the early Scottish industry. There is, however, virtually no documentary material available

about the first period in the history of the glassworks there, and very little concerning the second. Until it is possible to obtain access to the Wemyss Castle archives there seems little chance of expanding our knowledge of this important site. Although more material about other sites has come to light than I ever dared hope when I began my research, there are inevitably some important gaps. Newhaven is particularly frustrating - there seems no doubt that a glassworks was built there, but no information about it has been found. The Citadel glassworks is also problematic; it is well documented for a short period; but after its sale, in 1664, there is nothing.

Two factors are common to all the glass houses discussed in this thesis: proximity to water transport, and easy access to supplies of fuel, which, with one possible exception, was coal. The correlation between the Scottish coalfields and the glassworks sites can clearly be seen in a map printed in Hatcher's *The History of the British Coal Industry.*[1] (Fig.1). The later glassworks, from the 1660s, can be roughly divided into two groups: those at Leith and Glasgow were set up as purely business enterprises, the sites were feued as investment properties; all the raw materials had to be bought in, (although in Glasgow the coal was mined nearby); for much of the time production was limited to bottles, for which there was a known market. On the other hand, the glassworks at Morison's Haven, Port Seton, and Wemyss were built on land belonging to, and with the active involvement of, coal owners, who needed a local outlet for their product; the glassworks formed one part of a large estate business which was chiefly concerned with farming, but which also relied on coal, salt and glass production in symbiotic relationship.

Writing in 1976, Baron Duckham suggested that 'efforts to chart English influences in Scotland over wider economic fields than coal mining would be worthwhile', citing glass manufacture as one obvious example.[2] There is no question that the Scottish glass industry was always overshadowed by the economic power of its neighbour, and, more immediately by the larger glass industry of Newcastle, although there was co-operation at times, as well as rivalry. The bench-mark for quality and price was always English or Danzig glass, and most of the skilled workforce in the Scottish glassworks was recruited in England. Although there has been no attempt to single out the English influences on the early Scottish glass industry for particular comment, its existence will be evident throughout much of the narrative.

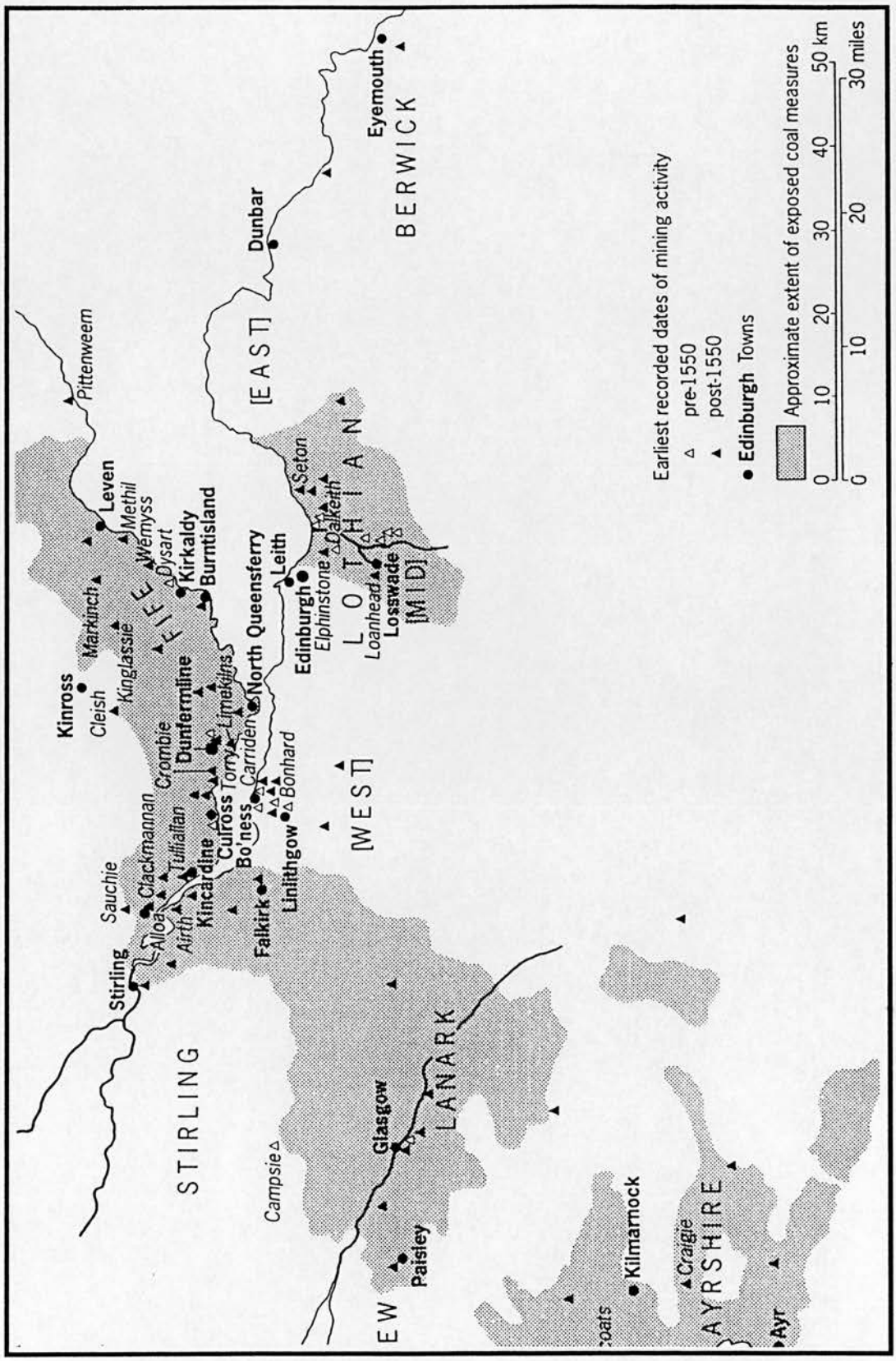


Fig.1. The Scottish coalfields. (J. Hatcher, *History of the British Coal Industry, Volume 1: Before 1700* (Oxford, 1993), 100)

The only book purporting to cover the whole Scottish glass industry is J. Arnold Fleming's *Scottish and Jacobite Glass*, published in 1938. Fleming's opening lines set the scene:

> Being unable to discover, or obtain in some cases, sufficient or satisfactory evidence for my purpose, I have been inclined when defeated in my search to throw the reins on that delightful horse Pegasus and allow him to find his way. Because this noble steed has been known to carry one pleasantly over the fields of imagination, some of which may be very homely, with which let us be content. (sic)[3]

He lives up to his word, with frequently frustrating consequences for the reader. The most infuriating aspect of Fleming's book is not the whimsical and digressive style, the plagiarism, the embroidered quotations, the innacurate descriptions, nor the confused chronologies, but the fact that, buried in the dross, are nuggets of interesting and relevant material, which require investigation, despite the lack of, or inaccuracy of, references. I have refrained from quoting more than a few modest examples of Fleming's style in this thesis, but his work has certainly provided a spur to my search for more accurate information.

Given the paucity of well-researched secondary sources, it is hardly surprising that economic historians have generally written little about the early Scottish glass industry. It was, of course, of minor importance, so is naturally worthy of less attention than, for example, the textile and salt industries. Nevertheless, it played its part in supplying local demand, and thus reducing the need for imported goods; in fact, it became a major player in the export market, as custom records after 1742 clearly show. It is my hope that this thesis will provide the evidence to enable the glass industry to be considered more fully alongside the other manufactories introduced into Scotland in the seventeenth century, which together formed the base on which the industrial expansion of the later eighteenth century was built.

[1] J. Hatcher, *The History of the British Coal Industry Volume 1: Before 1700* (Oxford, 1993), 100.

[2] B. Duckham, 'English Influences on Scottish Coal', *Scottish Themes*, J.Butt and J.T. Ward (eds.), (Edinburgh, 1976), 45.

[3] J.A. Fleming, *Scottish and Jacobite Glass* (Glasgow, 1938), 1.

CHAPTER 1

THE MANUFACTURE OF GLASS: SOME ASPECTS OF TECHNIQUE AND TECHNOLOGY

Glass is an extraordinary substance, created from very ordinary materials, made by man for some 3,500 years, and something we now take for granted. This was not always the case. In 1621, James Howell, who had worked in Sir Robert Mansell's crystal glassworks, and was then in Italy acting as his agent, wrote to his brother from Venice:

> The art of Glasse-making here is very highly valued ... and it is not without reason, it being a rare kind of knowledg and chymistry to transmute Dust and Sand (for they are the onely main Ingredients) to such a diaphanous pellucid dainty body as you see a Crystal-Glasse is.[1]

During the period covered by this thesis, glass production in Britain changed from a small, fragmented and precarious, minor industry, patronised by few wealthy customers, to a large scale manufacture, providing windows, drinking glasses, bottles, mirrors, scientific and chemical instruments for an ever-increasing public. Despite the change in scale and efficiency, however, the basic technology, apart from the switch from wood to coal-fired furnaces, remained much the same until well into the nineteenth century and many of the techniques are still in use today. In order to understand the industry in the period of transition, some aspects of the technology require explanation, although others will be covered in the text.

There are many descriptions of the constituents of glass; Felix Mehlman is succinct:

> Glass is created by fusing a silica such as sand, quartz or flint, with an alkali such as soda or potash. The latter acts as a flux, assisting the silica to melt, and encouraging the batch, or mixture, to combine more readily.[2]

Neither silica, soda nor potash, however, are straight forward constituents; each is of a complex character, and extremely variable. Professor W.E.S.Turner's research into early glass and glassmaking processes clearly demonstrates that variability and his analyses show a wide range of chemicals contained, in unpredictable amounts, in both sand and plant ash. He concludes that 'these facts explain why it was possible for the ancient glassmakers over many centuries to be making soda-lime-magnesia-silica glass

and yet be unaware that they were so doing until the second half of the eighteenth century.'[3] Silica provides about sixty to seventy percent of the glass batch.[4] It was known in the seventeenth century that some sands produced better glass than others, as well as varying colours, but, since the chemical reasons for the differences were not understood, selection of the constituents, like other aspects of the process, was by trial, error, and experience. As Turner comments, it is no wonder glassmakers closely guarded their secrets, when it was so precarious a trade.

While wood was used to fire the glass furnaces, the supply of alkali in the form of ash for the flux was ensured, beech ash being particularly efficacious. Transition to coal-fired furnaces, which will be discussed in more detail later, meant that ashes had to be bought in. One source of soda, imported for the production of crystal, came from a marine plant *Salsola soda*, obtained from the Mediterranean area, and usually called barilla.[5] An interesting description of it was given by Howell, writing from Alicante, the main source of supply, in 1621:

> It grows thus, 'tis a round thick Earthy shrub that bears Berries like Barbaries, but twixt blue and green, it lies close to the ground, and when it is ripe, they dig it up by the roots, and put it together in Cocks, wher they leave it dry many days like Hey, then they mak a Pit of a fadom deep in the Earth, and with an Instrument like one of our Prongs, they take the Tuffs and put fire to them, and when the flame comes to the Berries they melt, and dissolve into an Azure Liquor, and fall down into the Pit till it be full, then they dam it up, and som days after they open it, and find this Barillia-juyce turn'd to a Blew stone, so hard, that it is scarce Malleable. [6]

In France, as well as wood ash from the fuel, bracken was employed to make *verre de fougère*. Other plants could also be used, with varying degrees of efficiency, and Christopher Merret, writing in 1662, describes mixed ashes being bought to make green English glass,[7]often leading to a poor quality product.[8] The ash of some northern marine plants, usually referred to as kelp, could also provide soda and potash, and was of particular relevance to Scotland, where there was an abundance of suitable seaweeds. The purest form of alkali, used at the end of the seventeenth century to produce 'flint' glass (lead crystal) was pearl-ash. This consisted of potash which 'must ... be still further purified by solution and subsidence and then evaporating the fluid to dryness', the process leading to a loss in weight of thirty to forty percent.[9]

The kelp industry was of major importance to the economies of remote areas, like Orkney, in the eighteenth century, but it is significant that one of the earliest Scottish glass producers, James Ord, who will be discussed later, applied for the sole rights to burn and prepare kelp in Scotland as early as 1621.[10] A full description of the process is given by William Thomson in *Kelp-making in Orkney*,[11] so a brief note will suffice here. Both tangle, washed ashore from deep ocean beds, and rock-growing weed, which was harvested, were used in kelp production. After being dried, the weed was burned slowly in 'kilns', trenches or circular pits in the ground near the shore, the air being excluded. Correct combustion produced a molten mass, which was stirred with 'rakes' in Orkney or 'clatts' in the Hebrides, 'long wooden poles sheathed in iron with a hook on their ends - until it had fused to a hot and pasty mess.'[12] After about two days the kelp became a solid mass, which, when cold, was removed from the kiln and broken into large lumps, ready to be transported to the glasshouses or soap-works as required. It took twenty tons of sea-weed to make one of kelp.

The quality of kelp varied greatly and it was frequently contaminated by stones, sand and unburnt weed. Its chemical content was not scientifically measured until the 19th century.[13] An 1883 analysis, quoted by Thomson, showed that the kelp contained both soda and potash in variable quantities. In good kelp, the potash content varied between 21.95% and 15.1%, while in a bad product it could be as low as 5.75%. The soda content varied between 16.85% and 2.55%, a graphic illustration of the skills needed by the founder to produce a consistent metal (molten glass).

Other ingredients could be added to the batch to improve colour and clarity, the need for them depending on the constituents of the basic ingredients and the amount and type of chemicals leached from the crucibles. Manganese and cobalt oxides, in particular, were used as decolourisers, to counteract the effect of iron, which was present in both the sand and ashes. Only one-tenth of one percent of iron oxide 'renders the glass decidedly green, though the effect can be counteracted by decolourizers.'[14] Lime was an essential constituent for the stability of the glass, but often occurred naturally, and was not deliberately added in England.[15] In the 1670s George Ravenscroft introduced a highly significant change in the constituents of fine English glass. He perfected the use of lead oxide in the batch, to produce lead crystal, superior in durability, colour and brilliance to the earlier soda glass, and ideally suited to cold-working, such as cutting and engraving. It was destined 'to establish England

as the leader in the production of clear, colourless glass from the end of the seventeenth century.'[16]

The only other ingredient regularly added to the glass batch was, and is, broken glass, which, as well as being economical, reduced the melting point, facilitating fusion.[17] Known as cullet, it was a commodity in which there was a considerable internal trade, and which was also imported and exported in the seventeenth century.[18]

The process of fusing the ingredients into glass began with converting them into frit. The sand and alkali were heated and stirred together until partially fused into large lumps, which were then ground to a powder and placed, with the cullet and any additional oxides, in a clay pot, or crucible. This 'batch' was then subjected to a much greater temperature until completely fused, any impurities being skimmed off the surface with a ladle during the process.

When tests showed that fusion was complete, the glass-blowers took gathers of the molten metal and, with other members of the team, or 'chair', converted it into window-glass or vessels, often using moulds for the latter. The final, and vital, stage in the process, was to anneal the finished products in an oven known as a 'lehr'. This involved a gradual reduction in the heat to which the glass was exposed, either by slowly moving the glass away from the heat source, or gradually reducing the temperature of the oven. This process allowed the glass to cool slowly, thus greatly reducing its tendency to shatter easily.

A major change to traditional glass production, the switch from wood to coal as fuel for the furnaces, occured in England during the early years of the seventeenth century and inevitably involved several technical problems. Coal gave off noxious fumes and smoke, which were deliterious to the men working in close proximity to the furnace, while sulphur and carbon contaminated the hot metal in the open crucibles, discolouring the glass. Such discolouration was eventually used to advantage by the bottle-glass industry, but for most domestic glass of the time, it was to be avoided. In a furnace designed to burn wood, coal did not reach a sufficiently high temperature to melt the batch.[19] By overcoming these difficulties, English glassmakers not only enabled expansion of the industry beyond what would have been possible if relying on available wood for fuel, but they developed a technology which was unique to Britain for a considerable period.[20]

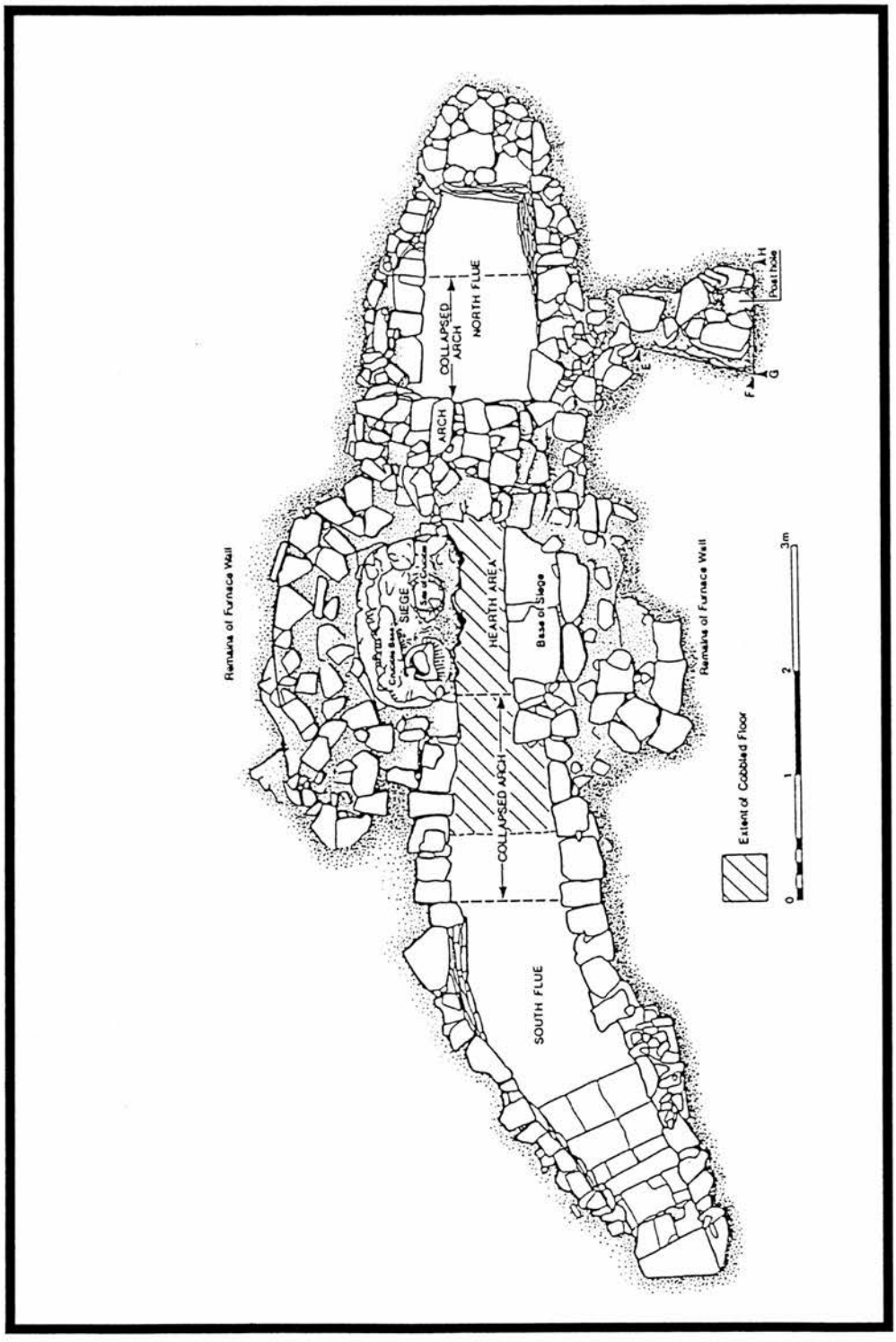


Fig.2. Haughton Green main furnace plan. ((R.H. Vose, 'Excavations at the 17th-century glasshouse at Haughton Green, Denton, near Manchester', *PMA*, xxviii (1984),10).

The design of wood and coal burning furnaces has been described in detail by Charleston,[21] Godfrey, and Kenyon[22] and only a brief summary is appropriate here. Glass furnaces were built on the reverbatory principle, by which the heat is deflected down onto the object to be heated. The fire itself was built on the furnace floor between the seiges on which the crucibles stood, the low, arched, roof deflecting the flames and gases onto the pots. Green glass required a higher temperature than crystal and the intense heat often caused damage to the furnace.[23] Kenynon estimates that the temperature reached 1200 degrees centigrade.[24] In addition to the main furnace, a subsidiary one for the melting of frit and preliminary heating of the crucibles was required, and a lehr, as mentioned above.

Three crucial changes to furnace design enabled coal to be burned in glassworks. Firstly, a metal grid on which to place the coals, with an ash pit underneath, was introduced. In conjunction with this, tunnels under the fire grate, extending to the exterior of the building, created a draught which greatly improved combustion, a system described as the wind furnace.(Fig.2). The third change was the introduction of the chimney. Godfrey writes that the industrial use of the chimney to increase draught was not understood in the early seventeenth century, being regarded merely as a method of drawing off the smoke.[25] Nevertheless, whether a full chimney, or simply a vent hole for the smoke, was introduced, the consequent increase in temperature solved the problem of melting the batch in closed crucibles, which became necessary to prevent contamination of the glass. By the end of the seventeenth century the well known glasshouse cone had encapsulated the principle of the chimney, in efficient and distinctive fashion, acting both as workshop and chimney, the earliest known example being built in Christ Church, Surrey, in 1688.[26]

Excavations of English transitional coal-fired furnaces are few, but provide valuable information. A report published in 1994 on the Haughton Green furnace near Manchester, which operated between 1615 and 1653, provides interesting material relating, among other things, to crucible design, long the subject of debate.[27] Antonio Neri, whose book *The Art of Glass* was published in 1611 and translated by Christopher Merrett in 1662, makes it clear that great care had to be taken with the fire, even when burning dry, hard, wood, because smoke 'always hurteth, and endamageth it, [the metal] especially in furnaces, where the vessels and pots stand open, and the glass will then receive imperfection, and notable foulness.'[28]

It is generally accepted that the change to coal burning furnaces would not have been possible without the concurrent development of closed crucibles to protect the metal from the far more noxious, and unavoidable, coal smoke, but no illustrations or descriptions of the early seventeenth century design appear to be known.[29] Using excavated crucible shards from Haughton Green, D. and F.E. Ashurst have postulated the theory that a V or U shaped section was cut from the lip of the pot, which was then covered with a flat lid, which remained in situ in the furnace, the liquid glass being removed, and the pot recharged, through the aperture in the side.[30]

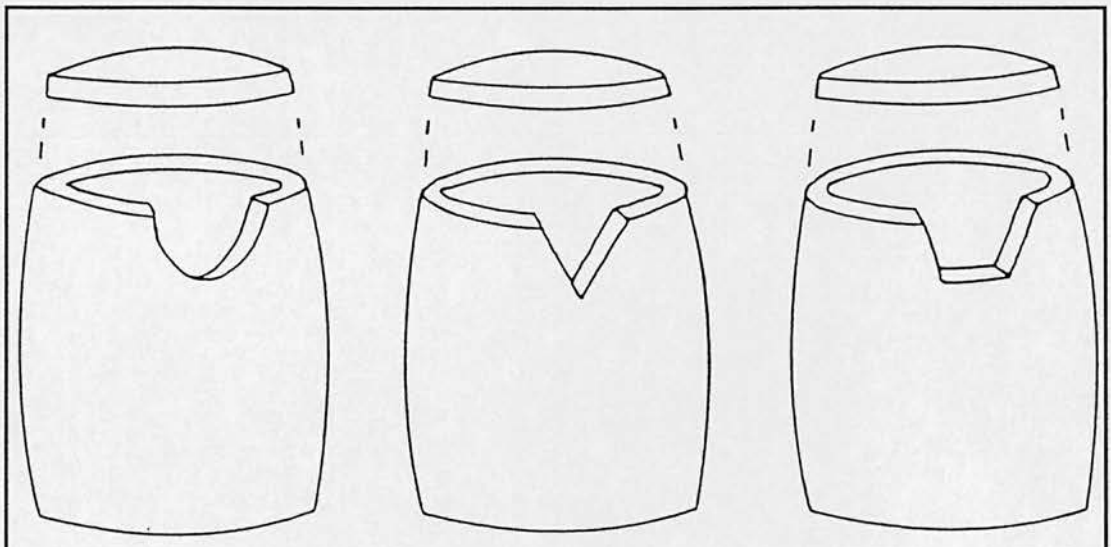


Fig.3. Possible design of crucibles at Haughton Green.

This design is simpler, and would require much less sophisticated potting, than the domed pot with an integral, protected, gathering hole, which had evolved by the early eighteenth century, and which is still in use today.(Fig.4)

The importance of the pots used to contain the molten glass, is constantly emphasised by glass historians. Apsley Pellatt (1791-1863), owner of the Falcon Glass Works in Southwark, delivered a series of lectures to the Royal Institution on 'The Manufacture of Flint Glass, and the Curiosities of Glass-making', subsequently incorporating the text into a book, published in 1849. He began the section headed 'Glass-house pots': 'the most important department of Glass-making is the manufacture of the melting-pots',[31]a statement amplified by Charles Hajdamach, writing in the 1990s, who states that 'the success of the glasshouse depended entirely on the pot maker's ability to build pots which would withstand many weeks or months of constant high temperatures and re-filling with the raw materials.'[32] If there were any imperfection in a pot, it would crack in the heat, resulting not only in loss of the

batch, but potential damage to the furnace as well. If the clay contained too great a proportion of impurities, such as iron, it could leach out and damage the metal.

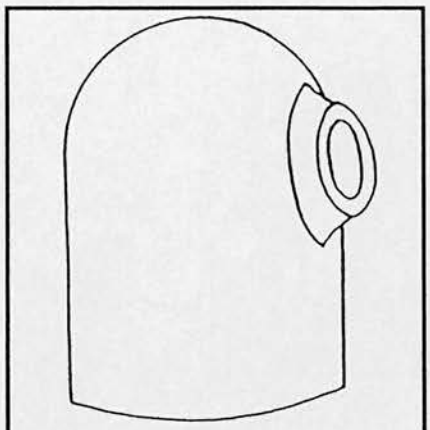


Fig.4. 18th century crucible

In order to ensure long-lasting pots, the clay had to be able to withstand the very high temperature of the furnace, and the corrosive effect of the molten metal. Christopher Merrett, in 1662, said that the crystal pots were made of clay from Purbeck in the Isle of Wight, 'the very same which makes Tobacco pipes', while those for the green glass furnaces were of Nonsuch clay, mixed with other clay from Worcestershire.[33]It is interesting that the traveller John Ray, writing of his journey along the east coast of the Forth between the Bass Rock and Leith in 1661, described seeing glasses being made, and added 'The crucibles which contained the melted glass, they told us, were made of tobacco-pipe clay.'[34]

Apsley Pellatt, in the first half of the nineteenth-century, used the best Stourbridge clay, combined with about one-fifth of ground-up broken pots (known as 'grog') which 'not only assists to dry the pots more regularly, but it renders the whole body more porous, and less likely to split by sudden heat'.[35] He comments that the fire-clay used 'is usually found in iron districts', although it could not be iron-rich. The clay was meticulously prepared and, certainly in Pellatt's time, was kneaded with the mens' feet until of the right consistency. It was then built up by hand, using small rolls of clay, and taking great care to exclude all air from the fabric, otherwise it would expand in the heat and shatter.

The pots varied in size, and were generally considerably smaller in the seventeenth-century. Merrett gave the dimensions of a pot large enough to hold three or four hundredweight of metal as twenty inches broad at the top and much narrower at the bottom, and two feet deep. The wall was one inch thick at the top, two at the bottom.[36] By Pellatt's time they measured 'three feet external diameter, and three feet high, to the filling part, and weigh about ten hundred weight',[37] although those for coloured glass were smaller. One of Pellatt's large pots held eighteen hundredweight of metal.[38] While the covered pot was essential for the production of fine, clear, glass, another seventeenth-century invention, an entirely new type of bottle, utilised the

discolouration caused by the furnace fumes, and was made in open crucibles. This was the much thicker, heavier, and more robust, dark bottle, which transformed the storage of alcoholic beverages, and was precursor of the wine and beer bottles in use today.

In 1661, John Colnett, descended from an old family of Flemish glassmakers, was granted letters patent by Charles II, for the making of glass bottles in standard sizes, claiming that he had invented the process. Within a year, however, his patent was opposed by four other bottle-makers, who claimed that Sir Kenelm Digby had actually invented the new type of bottle some thirty years before, and had employed them, and Colnett, to make them for him.[39] Their objection was upheld and the patent quashed. The starting date for the new type of bottle has, therefore, been assumed to be the 1630s, although the earliest dated examples are from the 1650s.

As well as being much sturdier, the 'English bottle' was distinguished by the 'kick' in the base, where the pontil rod had been attached. When broken off, the pontil mark was rough, but if pushed up into the base, the rough area was removed from contact with the surface on which the bottle might stand, and its stability was enhanced. The bottles also had a long narrow neck, with a ridge below the rim for tying down the cork. From the mid-seventeenth century it became possible to order bottles bearing a seal relating to the individual concerned, hence the often quoted diary entry by Samuel Pepys about going to the Mitre Tavern to see some of 'my new bottles, made with my crest upon them, filled with wine, about five or six dozen'.[40]

Based on numerous extant sealed and dated examples, chronologies of bottle shapes have been produced, providing a guide to the dates of unsealed examples.[41] However, the shapes inevitably varied, since they were free-blown, and customers clearly had a choice of design - a suggested list of bottles to be made at Port Seton in *c.*1730 mentions both 'round bottles' and 'long necks'.[42] Sizes too, were approximate. An agreement of 1709, at Morison's Haven lists four pint, chopin, mutchkin, and half mutchkin bottles, which were to be 'sorted in three sorts viz. the larger measure, the exact measure and short measure' to be delivered separately.[43]

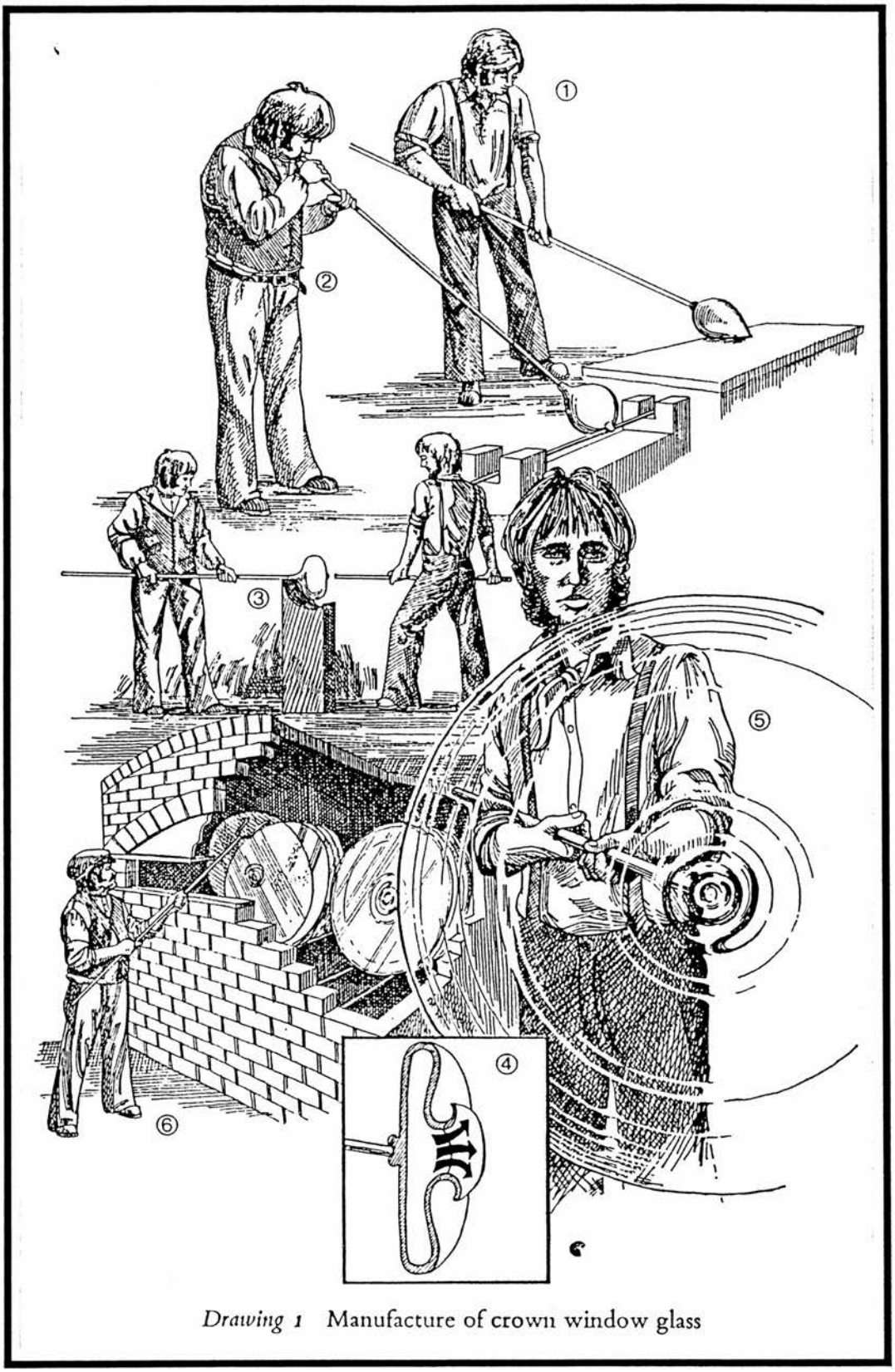
The colour of the 'English bottle' varied between dark green and almost black, which, in the case of bottles for the storage of beverages, was considered an advantage. The higher temperatures created by using open pots in a wind furnace, meant that it was possible to melt a batch containing more silica and less potash, thus creating the

stronger glass of which the bottles were made. They were a very successful export, to the extent that the French tried hard to imitate them throughout the eighteenth century.[44]

The Scots were particularly fortunate to have available coal eminently suitable for the firing of glass-furnaces. It was a hard coal,[45] described in 1612 as 'the best flamer and consumeth away into white ashes, as having in it more unctiousnesse than sulpharousnesse'.[46] Glassmakers required a long, clean flame, both to reduce contamination of the metal, and to provide the best atmosphere for the workmen. Robert Bald, writing in 1808, gives a detailed, and extraordinary, description of the 'great coal' produced in the Forth basin for the Edinburgh market. The coal was hewn, and transported, in large blocks, which could just be lifted by one or two men. According to Bald, smaller pieces, although of exactly the same material, known as 'chews', were resolutely refused by domestic consumers, but were used 'in glassworks, foundries, breweries ... and when free of culm [dust], they produce a heat much more intense than if large masses of coal were used'.[47] In the early days of coal-burning glass furnaces, Sir Robert Mansell depended on coal imported from the Forth, and was, for some years, convinced that no other was suitable, until the Scots were persuaded by Mansell's rivals almost to double their prices, and they lost the market to Newcastle.[48]

An assessment of the quantity of coal required to make glass is given by Godfrey, using the estimates of a factor at one of Mansell's furnaces at Wollaton, Nottinghamshire. He calculated a consumption of between five-and-a-half and six tons of coal to produce one ton of glass, which was confirmed by later accounts.[49] Godfrey concludes that 'we may assume ... that about 450 tons of coal were needed yearly in a broad-glass furnace operated by a single team', while a drinking-glass furnace consumed slightly less - some 400 to 425 tons.[50] However, Scottish 'great burn' coal is said to have burned more quickly than its English counterpart,[51] so consumption may have been greater in Scotland.

In the seventeenth century two types of window-glass were produced; crown glass, which originated in Normandy, and broad glass, from Lorraine, both made by ancient techniques which had been perfected during the fourteenth century and re-introduced into England in the sixteenth.[52]



Drawing 1 Manufacture of crown window glass

Fig. 5. Manufacture of crown window glass. Barker, *The Glassmakers Pilkington: 1826-1976* (London, 1977), 24).

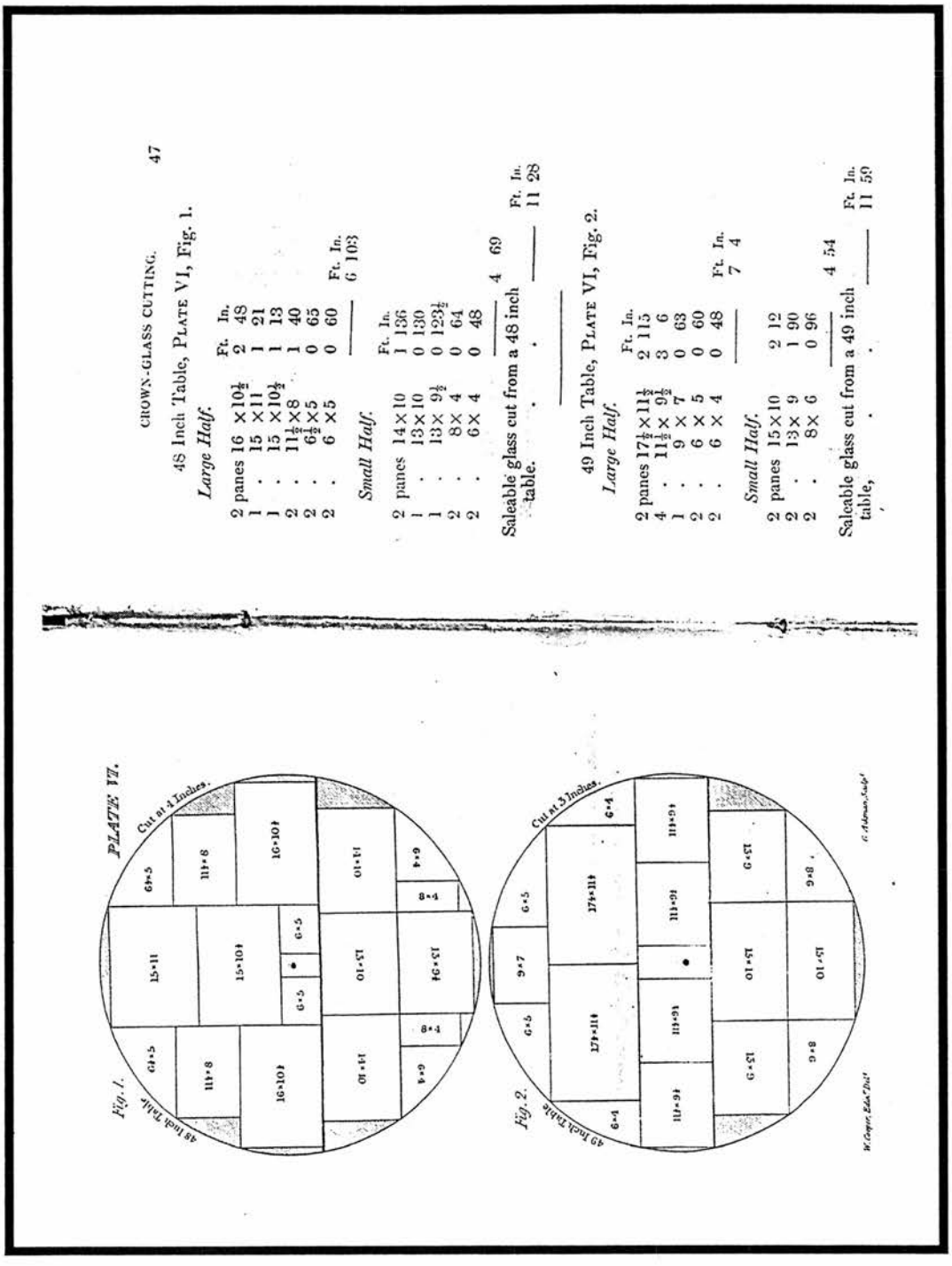


Fig.6. Diagram showing method of cutting crown glass. (Cooper, *Crown Glass Cutter and Glazier's Manual* (Edinburgh, 1835), 46-7).

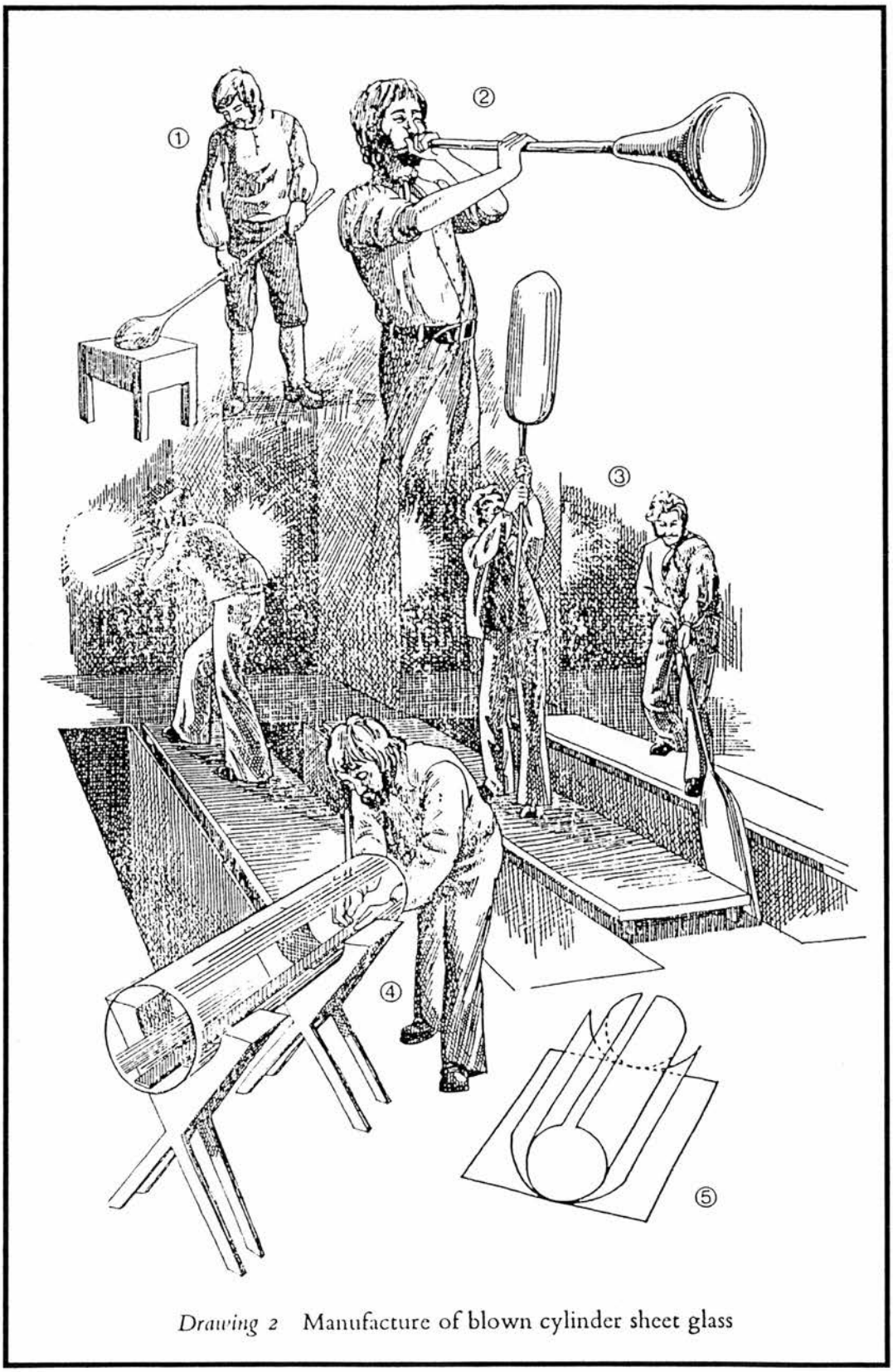
Crown glass was produced by blowing and marvering (rolling on a flat surface, of polished iron or marble) a large gather of glass, to create a sphere, to which a pontil rod was attached opposite the blowing iron, which was then broken off. The 'piece' was reheated, partially opened, and then twirled rapidly on the pontil rod until,

through the effect of centrifugal force, it opened out (or 'flashed') into a flat, circular plate, known as a table. (Fig.5). Its size depended on the amount of glass metal in the gather. In his book *The Crown Glass Cutter and Glazier's Manual*, published in Edinburgh in 1835, William Cooper suggested three gathers in total, amounting to nine or ten pounds in weight.[53] (This amount of molten glass could not be obtained from the pot all at once). The circular table was then cut into panes, the most economical method being meticulously described by Cooper. (Fig.6). The advantage of this system was that the glass did not come into contact with any surface during production, and therefore retained its brilliance. On the other hand, it was less economical because of the centre 'bull's eye' and the waste from cutting (which was, however, sold back to the glasshouses as cullet).

The Lorrainers' method was to blow a large cylinder, or 'muff', of glass, again using a multiple gather. The blower, standing on a raised surface, employed a combination of blowing, turning and swinging the glass to create a large cylinder, the ends of which were then cut off. It was slit along the side, reheated, and flattened to form a roughly rectangular sheet of glass.[54] (Fig.7). Although the shape of the finished glass was more economical, the surface was marred by contact with the surface on which it was flattened. Broad glass was the most common variety found in Britain in the seventeenth century,[55] but as cheapness became less crucial and quality more important, crown glass became increasingly popular during the eighteenth century,[56] and continued to be made well into the nineteenth, the last furnace being shut down in 1872.[57]

Mirror glass was not made in England until the 1620s, and was not attempted in Scotland until the end of the century. Until then, finished mirrors were imported into Scotland from northern Europe, but from the 1690s some plate-glass appears to have been produced locally, while rough plate-glass was also imported and finished. The plate-glass, from which mirrors were made, was considerably thicker than that required for windows, to allow for the grinding and polishing needed to produce a flawless surface. The same glass was used to provide windows for coaches and sedan chairs, since it had to be strong enough to withstand the stresses inherent in such vehicles.

In the seventeenth century there were two ways in which plate-glass was produced: the broad-glass method described above, which continued to be used in England until



Drawing 2 Manufacture of blown cylinder sheet glass

Fig.7. Manufacture of broad glass. (Barker, *The Glassmakers*, 56-7).

the 1770s;[58] and casting, a system developed in France in 1688, but not used successfully in England until 1773.[59] In the latter method the molten glass was poured onto a sand-covered metal plate with raised edges and was pressed flat with an iron bar. In both methods the quality of the ingredients had to be high, in order to avoid impurities, which could not be disguised.

Transforming the rough plates of glass into mirrors was the task of specialist craftsmen. Their job was onerous and unhealthy, using abrasives of varying courseness to first grind and then polish the glass, the time-consuming and labour-intensive work being described in detail by Geoffrey Wills. The glass finally had to be silvered, a process explained in 1757 by 'A Glass-House Clerk' in *The Plate-Glass Book*:

> The Plate being polished, a thin blotting Paper is spread on a Table, and sprinkled with fine Chalk; and this done, over the Paper is laid a thin *Lamina*, or Leaf of *Foil*, on which is poured *Quicksilver*, which is to be equally distributed over the Leaf, with a Hare's Foot, or Cotton. Over the Leaf is laid a clean Paper, and over that the Glass Plate - With the *left* Hand the Glass-plate is pressed down, and with the *Right* the Paper is gently drawn out; which done, the Plate is covered with a thicker Paper, and loaded with greater Weight, that the superfluous Quicksilver may be drawn out, and the *Foil* adhere more closely to the Glass. When it is dried, the Weight is removed, and the Looking-glass is complete.[60]

It was then ready for the frame-maker.

The number of processes through which it had to go, and the considerable risk of breakage, inevitably meant that the price of mirror glass was high, particularly for large plates. *The Plate-Glass Book* consists largely of tables which show that the selling price for finished looking-glass, including duty, in 1757, was 5s 5d sterling for a plate measuring 10 x 12 inches; £9 19 0 for one of 30 x 40 inches; and £81 17 0 for the largest size listed, measuring 42 1/2 x 60 inches.

Lenses, scientific instruments and other specialised areas of glass production were, of course, used in Scotland but there is no evidence that the glass components were made there during the period under discussion. William Morison's patent to make

glass in 1698 did include watch glasses, which were cut and ground from the same flat sheets of high quality glass as mirrors, but he does not appear to have succeeded in producing them, at least to an acceptable standard.[61] James Short (1710-1768), a famous Scottish instrument maker who began working in Edinburgh in 1732, although he moved to London in 1738, rapidly moved away from using glass mirrors in his telescopes, as he found 'speculum metal' more effective.[62] His brother, Thomas, was an instrument maker in Edinburgh and Leith from about 1737, but any glass he and others required was almost certainly imported and since highly specialised production techniques were involved, they will not be examined here.

There is, however, evidence that hour-glasses were made at Leith in the late 1670s or early 1680s.[63] These devices, more accurately known as sand-glasses, were widely used to denote the passage of a fixed period of time. Although this was usually an hour, it could be adjusted - log-glasses used on ships were, for example, set to measure from fourteen to twenty-eight minutes.[64] They were made from two blown glass vials connected through a small neck, set vertically into a wooden frame. According to Newman's *An Illustrated Dictionary of Glass,* the two vials initially had a small metal diaphragm containing a tiny hole set between them, and were joined together by an applied glass thread. In the eighteenth century, they were joined together by a 'sealed-in metal bead', and only later were they made in one piece with a small passage for the sand to pass through.[65] Before the seventeenth century sand-glasses were imported into both England and Scotland, from Germany, the Low Countries and Venice, but they were subsequently produced by Sir Robert Mansell. Godfrey's description of hour-glass producton in the seventeenth century differs somewhat from Newman's, however. She writes that the vials were made by 'filling [the vials] with sand and then joining the narrow necks over a flame, a process known today as lamp-working. The process required no great skill ...'[66] It is clear from both descriptions, however, that the vials were provided by the glasshouses for specialist hour-glassmakers, although neither Newman nor Godfrey explains how the glass for joining the two sections was heated; presumably cullet was melted in a small furnace in the workshop.

In conclusion, it should be born in mind that, despite the changes to furnace technology and the ingredients used in the batch, which have been described above, the glass blower of 1750 would have used the same tools, employed the same techniques, and worked the same hours, as his predecessor in 1610. And his

successors would continue to do so, until the introduction of pressed glass in the 1830s.

[1] James Howell, *Familiar Letters* (London, second edition 1650), 47.
[2] F. Mehlman, *Phaidon Guide to Glass* (Oxford, 1982), 8.
[3] W.E.S. Turner, 'Studies in Ancient Glasses and Glassmaking Processes. Part v. Raw Material and Melting Processes', *JSGT*, xl, (1956), 277T.
[4] Mehlman, *Guide*, 8.
[5] H. Newman, *An Illustrated Dictionary of Glass* (London, 1977), 34.
[6] Howell, *Letters*, 40.
[7] C. Merret, trans. of Antonio Neri *The Art of Glass*, (London, 1662), 264-5. Merret translated Neri's work of 1611 and added his own comments. References will be listed under the appropriate name.
[8] E.S. Godfrey, *The Development of English Glassmaking 1560-1640* (Oxford, 1975), 158.
[9] Rev. D. Lardner, *A Treatise on the progressive improvement and present state of the Manufacture of Porcelain and Glass* (London, 1832), 145.
[10] *RPCS*, xii, 771-2.
[11] W.P.L. Thomson, *Kelp-making in Orkney* (Orkney, 1983).
[12] R. Leitch, 'Eking out a precarious living from the seashore', *West Highland Free Press*, 20 May 1994.
[13] Thomson, *Kelp-making*, 37.
[14] Godfrey, *English Glassmaking*, 157.
[15] *ibid*, 157.
[16] R.H. Vose, *Glass* (London, 1980), 119.
[17] Mehlman, *Guide*, 10.
[18] Godfrey, *English Glassmaking*, 160.
[19] *ibid*, 148.
[20] C. Hajdamach, *British Glass 1800-1914* (Woodbridge, 1991), 15.
[21] R.J. Charleston, 'Glass Furnaces Through the Ages', *JGS*, xx (1978).
[22] G.H. Kenyon, *The Glass Industry of the Weald* (Leicester, 1967).
[23] Godfrey, *English Glassmaking*, 143.
[24] Kenyon, *The Weald*, 53.
[25] Godfrey, *English Glassmaking*, 153.
[26] R. Bendrey 'The Falcon Brick Cone Glasshouse the other revolution of 1688' *The Glass Circle Journal*, viii (n.d.), 55. Also see frontispiece.
[27] R.H. Vose, 'Excavations at the 17th-century glasshouse at Haughton Green,

Denton, near Manchester', *PMA,* xxviii (1994), 1-71.

[28] Neri, *Art of Glass,* A4.

[29] Vose, 'Haughton Green', 47.

[30] *ibid,* 45-8.

[31] Apsley Pellatt, *Curiosities of Glass Making* (London, 1849), 50.

[32] Hadjamach, *British Glass 1800-1914,* 22.

[33] Merett, *Art of Glass*, 243.

[34] P.H. Brown (ed.) *Early Travellers in Scotland* (Edinburgh, 1891), 231.

[35] Pellatt, *Curiosities,* 50.

[36] Merett, *Art of Glass*, 243.

[37] Pellatt, *Curiosities,* 51.

[38] *ibid*, 47.

[39] R.J. Charleston, *English Glass and the glass used in England, c.400-1940* (London, 1984), 94; Godfrey, *English Glassmaking*, 228-9.

[40] R. Dumbrell, *Understanding Antique Wine Bottles* (Woodbridge, 1992), 25.

[41] See R. Dumbrell, *Antique Wine Bottles*; Ivor Noel Hume, *A Guide to the Artifacts of Colonial America* (USA, 1991).

[42] NAS, GD345/765/9. Grant of Monymusk Mss.

[43] NAS, GD1/576/15. Papers of David Fearn, WS.

[44] Charleston, *English Glass,* 96.

[45] Godfrey, *English Glassmaking,* 83.

[46] Sturtevant, *Metallica* (London, 1612), 110.

[47] R. Bald, *General View of the Coal Trade of Scotland* (Edinburgh, 1808), 47-50.

[48] State Papers, Domestic, Jas. I, Vol. 162, No. 63, printed in Hartshorne *Antique Drinking Glasses*, (New York, 1968), 428.

[49] Godfrey, *English Glassmaking,* 194.

[50] *ibid*, 195.

[51] J. Hatcher, *The History of the British Coal Industry*, i (Oxford, 1993), 104.

[52] Godfrey, *English Glassmaking,* 19-20.

[53] W. Cooper, *Crown Glass Cutter and Glazier's Manual* (Edinburgh, 1835), 27.

[54] An improved version of this method is still used at the Verrerie de St Just at Saint-Just-Saint-Rambert in France, producing 'antique' glass for stained glass artists. The blower stands alongside a pit in which he swings the cylinder as he blows, the weight of the gather being between 15 and 18 pounds. The split cylinder is reheated in a small oven and flattened with the help of a piece of soft poplar wood on a handle, kept soaked in water to prevent burning. (Personal visit 1995).

[55] H. Louw, 'Window-Glass Making in Britain c.1660-c.1860', *Construction History*,

vii (1991), 48.

[56] T.C. Barker, *The Glassmakers Pilkington: 1826-1976* (London, 1977), 25.

[57] *ibid*, 126.

[58] G. Wills, *English Looking Glasses* (London, 1965), 55.

[59] Newman, *Dictionary of Glass*, 62.

[60] A Glass-house Clerk, *The Plate-Glass Book* (London, 1757), p. xxii. Fleming claimed that William Morison of Prestongrange 'evolved this process: "The sheet of glass is now laid perfectly horizontal; it is thoroughly covered with tinfoil as before, but over this some mercury is now poured and dabbed with a hare's paw to assist contact, penetration and amalgamation". (A. Fleming, *Scottish and Jacobite Glass* (Glasgow, 1938), 106), but there is absolutely no evidence to support this assertion in Woodcroft's *Alphabetical Index of Patentees of Invention 1617-1852*, (reprint, 1969) or elsewhere.

[61] See Chapter 8.

[62] T.N.Clarke, A.D. Morrison-Low and A.D.C. Simpson (eds.), *Brass & Glass* (Edinburgh, 1989), 2.

[63] See Chapter 6.

[64] Newman, *Dictionary of Glass*, 271.

[65] *ibid*, 271.

[66] Godfrey, *English Glassmaking*, 233.

CHAPTER 2

THE COMMERCIAL BACKGROUND

At the beginning of the seventeenth century the commerce of Scotland was largely based on the products of long-established indigenous trades, sold within the country under the rules of the burghs; imported manufactured goods, sold by merchants who traded overseas, especially with the Low Countries, the Baltic and France; and the export of raw materials, such as hides, wool and coal. Raw materials, particularly iron and deals, were also imported in considerable quantities. Most of the inhabitants lived at subsistence level, the bulk of the population being in the Highlands. However, for a small, but growing, number of men in the central belt, especially Edinburgh, overseas trade was leading to increased prosperity, with its concomitant demand for non-essential goods, such as glass, and the services of professionals, such as lawyers.

The range of imported goods available, theoretically at least, is illustrated in 'The Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D. 1612',[1] which includes, as well as furniture, carpets, dolls, hats, silk, oranges and numerous other items: beads of crystal, glass flagons, burning glasses, looking glasses, hour glasses, glass vials and 'vantoses' [cupping glasses], water glasses, wine, beer, and 'Venice' drinking glasses, and seven types of window glass. The disparity between the number of potential imports and exports is graphically illustrated by the fact that the list of the former occupied some forty-eight printed pages, the latter only five.[2] Clearly, since the raw materials exported were insufficient to pay for the goods imported, there was a constant drain on the country's finances, a situation which excercised the minds of those in power throughout the seventeenth century. This chapter will attempt to examine the steps taken to correct that balance, with special reference to the glass industry, and to explore the business practices which developed during the century.[3]

In the introduction to his seminal book, *The Constitution and Finance of English, Scottish and Irish Joint Stock Companies to 1720*, W.R. Scott described the two dominant economic policies of the reigns of James VI and Charles I: to encourage home fishing; and to attempt to establish Scottish manufactures.[4] The latter aim, which continued to be dominant throughout the seventeenth century, was of particular importance in combating the drain on currency described above. Encouragement was given in the form of patents of monopoly and, especially in the latter half of the

century, supportive legislation, granting valuable privileges, exemption from taxes and, crucially, protection from imports. These inducements featured prominently in the history of the Scottish glass industry.

Scott mentions several grants of monopoly given to Scots favoured by James VI, including Nathaniel Udward and Patrick Mauld for soap and Sir George Hay[5] for the manufacture of glass, but he goes on to say that 'none of these industries was successful'. In the case of Sir George Hay's glass manufacture, at least, Scott was mistaken - Hay not only succeeded, but he succeeded handsomely, and his family benefited from the proceeds of the glass patent for nearly seventy years, as will be shown in chapter four. Although Hay's venture was not typical, because of the political situation peculiar to the glass monopoly, it can be shown that not only did Hay succeed, but that the manufacture of glass in Scotland continued from the granting of his patent in 1610, through to 1750, the end of the period under discussion, almost without a break. Whether this success was directly related to the fiscal policies is for others to judge.

To describe the measures taken to assist manufactures as 'policy', in the modern sense of the word, is, perhaps, misleading; but the *aim* was clearly stated, although enabling measures tended to be legislated for in an *ad hoc* manner, implemented throughout the century, as the need arose, and often in response to individual requests. James VI clearly wanted to encourage 'the practice of tradis not formarlie knowne'[6] for which not only were monopolies deemed necessary, but the acquisition of foreign expertise was recognised as essential. Flemish and English weavers, dyers, spinners and waulkers came to Edinburgh to improve the all-important cloth industry in the early years of the seventeenth century;[7] English iron smelters worked for Sir George Hay on Loch Maree from *c.*1612 to 1626; and a small colony of Italian Catholic glassmakers lived and worked in Morison's Haven in the 1620s, until about 1646. Without the positive enrolment of English and European experts, throughout the century, there would have been no Scottish glass industry. Nor would soap boiling, sugar refining or paper making have been possible.

So how were these foreign experts found? In the case of the glass industry, at least, it was by active recruitment, usually in London. Venetian glass maker John Maria del Acqua was recruited in 1617 by a London goldsmith, who appears to have acted for the proprietors of two glasshouses in Scotland. Other Venetians were, no doubt, persuaded to go to Scotland by Hay's English friends and backers, much to the

annoyance of Sir Robert Mansell, who had brought them to England in the first place, at some considerable cost. One of the inducements to foreigners was the offer of naturalization, confirmed in an Act of 1641, and again in 1661.One of Mansell's Venetian glassmakers, Cornelius Visitella, remained in Scotland in 1646, after the departure of his fellow workers, to run his own small glasshouse. His descendants were still working in the Scottish glass industry in 1707. Later in the century, expert glassmakers from well-known Italian and French families were contracted by Scottish entrepreneurs to run the glassworks in the Citadel at Leith, and at Morison's Haven, and most of the workforce was English, recruited in London or Newcastle, and inevitably at some cost. The glass industry was unlike others, however, in that the teams of workmen were often itinerant - they moved to where the work was, commanded high wages, and guarded their secrets. Contracts of employment signed by Edward Dagnia and Daniel Tittory, in 1663 and 1698 were quite specific in their requirements, but these did *not* include teaching local men their skills. In terms of employment, therefore, certainly in the seventeenth century, glass making was of limited consequence, although unskilled labourers and some semi-skilled local men were employed. More importantly, it did not increase the national skills base.

Scott describes the greatest difficulties faced by three early woollen mills as 'the necessity for importing skilled workmen, the hindrances to the disposing of the goods ... and the want of sufficient capital'.[8] The wool manufacturers had the trade restrictions of the burghs to contend with but, in all other respects, the same problems were experienced by the glass manufacturers. Once the seeking out and procurement of foreign workers was accomplished, disposing of the goods they made was probably the biggest problem. Although it expanded considerably during the seventeenth century, the Scottish market remained relatively small, particularly the number of people with disposable income available to spend on a luxury item. A complaint which occurs again and again in appeals to the legislature for help, is that the market could not absorb the volume of glass produced. The expedient of reducing production was not possible for the glass industry; once the fire was lit, it had to be maintained as long as possible, being worked round the clock in six-hour shifts. Wages were high, and if the fire was out, 'dead', or 'play' wages, of half the usual rate, had to be paid, otherwise the men would pack up and move elsewhere. A team of glassworkers produced a roughly predictable number of items per shift and, in order to be economically viable, these had to be sold at a rate competitive with Newcastle, London or Danzig. In 1647, for example, Cornelius Visitella estimated that two teams of two men would produce 1,800 wine or beer glasses a week.[9] Not only had those

glasses to be sold, but they had to be sold quickly enough to maintain the constant cash-flow essential to buy the fuel for the furnace, and to replenish the stocks of raw materials.

The reality of the particular problems of glass production is born out by the evidence presented to a committee of the English parliament in 1696. Although likely to be exaggerated, in order to support their contention that the English glass industry was being decimated by the imposition of a new duty, the petitioner representing the London bottlemakers explained that:

> the Glass Manufactory cannot be managed as other Trades may, to make their Goods as Customers may have Occasion for them by reason the Charges of putting in and out their Fires being 50 or 60 L. they must, when they begin to work, continue till they have made a great Quantity; in a great Part of which, they generally lose 10 or 12 L. per cent by the Breaking and Flying thereof in the Warehouses; and by some Sorts of Glass, which will grow out of Fashion, they lose often 20 or 30 L. per cent; and often lose 30 or 40 L. a Week, by Pots breaking and Loss of Metal[10]

While changes in fashion were unlikely to have been such a problem in Scotland, breakage of the glass and the pots was a universal problem within the industry, and one with no parallels elsewhere.

Protectionism was offered piecemeal to the different manufactures, until home production was, in theory at least, completely protected by an 'act for encouraging trade and manufactures' in 1681,[11] which consolidated much of the earlier legislation and particularly a similar act of 1661.[12] As well as confirming the same rights to foreigners, who brought in new skills and capital as those possessed by native Scots, the act also exempted imported raw materials from duty for nineteen years; confirmed that no soldiers should be quartered, nor levies imposed, at a manufactory; and exempted employees from military service for seven years. It also forbade the importation of many luxury items, including fabrics, shoes and carpets. In order to benefit from these considerable privileges, the status of manufacture had to be granted by parliament. Without such measures, particularly protection from imported goods, many early industries would presumably have struggled even more than they did. However, Smout has pointed out that, certainly as far as foreign textiles were

concerned, weak administration in Scotland failed to prevent imports, despite the legislation,[13] and similar enforcement problems were experienced by glass makers. However, the Scottish glass industry would certainly have been even more vulnerable to the products of Newcastle without some attempt at protection.

Under James VI, Sir George Hay obtained both a ban on imports, and permission to export to England, but that extent of royal patronage was unique to him. Later, in 1664, frantic appeals by Robert Pape to take stern measures to stop bottles being brought in, were heeded by the privy council, but apparently to little effect. In the end, however, an assured market was the only key to survival and the early Scottish glass industry survived because of the population's penchant for wine, and the volume of the trade with France, which created a steady demand for the 'English' bottle, and for which Scottish manufacturers retained their monopoly until the Union of 1707. By then, despite the opening up of the market with England and being drawn into the war with France, the Scottish trade was strong enough to support three glassworks, two on the east, one on the west coast. That is not, of course, to say that there were not severe peaks and troughs in their fortunes, before and after the Union.

Crucially, their product had to be competitive. In a telling report to Treasurer Godolphin, after the Treaty of Union, the Customs Commissioners in North Britain wrote of Scottish manufacturers being 'obliged to give over their works' because of the war with Holland, and continued: 'others of course must desist when goods of the like fabric may be brought [imported] better & on easier terms from South Britain than those [these] parts can afford.'[14] If they had not been producing wares of adequate quality, and at the right price, including sealed bottles to individual order, the glasshouses of Leith, Morison's Haven and Glasgow, would have been swamped by the products of Newcastle and Bristol after the Union.

The third problem listed by Scott was shortage of capital. The initial investment required to set up a glasshouse employing two teams of workmen was considerable. In 1647, Visitella estimated it to be £200 sterling, of which only £80 was for the infrastructure, the buildings, furnaces and pots; £20 was for equipment; and the remaining £100, half the total, was for barilla, an essential raw material for making good quality glass, which had to be imported from the Mediterranean via London. Bottles required cheaper, more local, materials. Finding men willing and able to provide the initial funding for such an enterprise was difficult enough, even more of a problem was persuading them to produce extra investment to maintain production,

once the business had started. It may have been a problem peculiar to the glass industry - either a furnace was operating full blast, or it wasn't; there was no possibility of a gradual start-up, building to full production once a market had been established. So until receipts could pay for running costs, further injections of cash were needed, and were not always forthcoming. By the mid-eighteenth century, partnerships were larger, the initial capital was greater, and the problem appears to have been largely resolved.

In the first forty years of the seventeenth century, as J.J. Brown has shown, merchants in Edinburgh began to develop business practices which had become the established norm by the end of the century. Among others, Brown lists: 'involvement in partnerships; ... the development of a credit structure, involving transferable and heritable bonds, bills of exchange and an awareness of the international money-market; ... and the channelling of surplus capital into industrial and manufacturing enterprises.' [15]

The partnerships referred to by Brown were usually informal and often concerned shared ownership of ships or cargoes, but he makes the point that such joint capital investments were the precursors of the joint stock companies, the establishment of which was enabled by an Act of 1641.[16] Unfortunately, by 1640 the economic prosperity enjoyed by the merchant elite had come to an end. Whyte describes the next fifteen years as a 'period of disaster for the Scottish economy',[17] and this period of upheaval halted any incremental progress in the development of the business practices begun earlier. The foundations had been laid, however, and were built on in the later seventeenth century, to be further developed in the eighteenth.

Investment capital for the early glass industry came from a variety of sources. Sir George Hay may well have set up his first industrial enterprise himself, but for most of the glassworks established under his patent, he almost certainly had English financial backing. Two mid-century entrepreneurs, John Jossie and Robert Pape, appear to have established glassworks single handed, but Jossie lost £20,000 Scots, thanks to marketing problems, Pape had similar difficulties and sold up quickly. When Cornelius Visitella wanted financial backing for his glassworks in 1647, he approached Sir James Hope of Craighall, who arranged a meeting with Sir Alexander Hamilton, General of the Artillery, Sir James Balfour of Denmylne, Lord Lyon King of Arms, and two untitled men.[18] Whether they funded Visitella is not known, but clearly a joint investment was envisaged. For the rest of the seventeenth century, co-

partnerships were the norm, many consisting of a small number of investors. The Leith works in 1678, was set up by three members of noble families and Sir James Stansfield of New Mills, an enterprising Yorkshireman and founder of the cloth mill at Newmilns, a much larger enterprise with twenty-four partners. He, like many of the other investors of the later seventeenth century, was involved in a range of enterprises, so spreading the risk. Although members of the nobility, one of the founding partners, James St. Clair of Roslin and, later, Sir Robert Gordon of Gordonstoun appear to have played an active role in company affairs, and were not merely sleeping partners.

By the end of the century, the range of men investing in industrial enterprises had expanded greatly, and the number of co-partners in the larger, more capital intensive industries had increased. Merchants were the dominant group by a wide margin, but men from widely differing backgrounds had disposable capital, and were prepared to risk it in new enterprises. The fifteen co-partners in the Morison's Haven glassworks in 1698, for example, were more varied than most and included a vintner, a tailor, a slater, a wright, a glazier, an advocate, an apothecary, two landowners and, significantly, two glassmakers. The co-partner status of the main glassmaker - the man with the expertise on which the whole enterprise depended - was clearly designed to ensure that his interest in the success of the business was greater than that of a mere employee, and was not confined to Morison's Haven. Each of the co-partners was committed to invest £50 sterling.[19] An alternative method of raising funds was employed by the Scots White Paper Manufacture in 1694, when fifty men subscribed for shares of £3 sterling each, their individual holdings varying from twenty to four. Among their number were wealthy landowners, the master of the stocking manufacture, writers, 'gentlemen', a bookseller, and numerous merchants.[20] As well as holding shares in a number of enterprises, ranging from the importation of commodities to shares in new industries, a more coherent pattern of investment also appears. James Balfour, merchant of Leith, for example, invested in a soapworks, gunpowder and alum manufactories, and a glassworks, all of which required the importation of potash. He also owned a share in imported tobacco, a shipyard and timber, and was a founder of the Company of Scotland Trading to Africa.[21] A similar pattern can be seen in the portfolios of other investors, early examples of the pattern highlighted by Devine in his list of the business interests of tobacco merchants in the second half of the eighteenth century.[22]

In his analysis of the contribution of merchants to the establishment of new industries in the seventeenth century, Devine identifies the origins of capital invested in forty-nine from a total of fifty-two Scottish ventures. He shows that in thirty-four cases all the capital came from merchants and concludes that the industrial expansion of the second half of the eighteenth century, to which merchant capital provided a major contribution, was based on the 'significant, though much more modest origins, in earlier times'.[23]

The precise legal rights and obligations of the early Scottish co-partnerships do not seem to be entirely clear. R.H. Campbell writing on 'The Law and the Joint-Stock Company in Scotland',[24] concentrates on the post-Union period. However, he makes it apparent that, from the beginning, Scottish law was more liberal than English, in that joint-stock companies, even if not legally incorporated, were assumed to be liable for debts only to the extent of the individual's share holding. He writes that the Scottish law of partnership, 'provided for the three major advantages of incorporation: transferable shares, the right to sue and limited liability.'[25] This position changed as the English system came to dominate, and the question is a complex one, which appears to have been the subject of much discussion and disagreement through to the nineteenth century. However, Campbell is clear that, during the seventeenth and early eighteenth centuries, Bell's interpretation that: 'the very meaning of confining the trade to a joint-stock being that each shall be liable for what he subscribes and no further'[26] held sway.

The early co-partnership agreements, often entered in the register of deeds of the Court of Session, tend to be short and limited in scope, concentrating on the rules of the company, rather than wider issues. The contract of co-partnery of the North Leith glassworks, of 9 August 1688, for example, sets out rules relating to meetings, accounts, requests for further advances of cash and penalties for non-compliance. The only clause concerned with non-business matters states that each investor's interest in the stock 'in loss and gaine' should go to to his heirs and specifically to 'the eldest without division'.[27] It is in sharp contrast to the much more sophisticated and comprehensive co-partnership agreement establishing another company on the same site in 1746, which extended to eight pages, each one signed by all fifteen partners, and which, as well as the rules for running the business, stated in much greater detail what should be done in event of the death of a partner, and the ways to protect both the company's interests and those of the deceased.[28] Neither agreement, however, dealt with the issue of corporate liability.

The transfer of shares certainly appears to have taken place freely within the seventeenth-century co-partnerships: in 1699, for example, an eighth share in the North Leith glassworks was transferred from Robert Gordon of Gordonstoun to James Balfour, merchant in Edinburgh.[29] In 1686, when attempting to clear the enormous debt left by his father, James St. Clair of Roslin transferred to Alexander Hamilton: 'all right title or interest' that his deceased father 'had or could pretend as one of the partiners of the Glasswork in Leith in and to the said Glasseworke And to the Glasse houses window glasses botles wyne glasses tewells and materialls belonging thereto'.[30]

There was, of course, no formal banking system in Scotland until the foundation of the Bank of Scotland in 1695, two years after the Bank of England, its remit being to employ capital 'in the trade of lending and borrowing money upon interest and in no other'.[31] The maximum interest to be charged on loans was 6 per cent, the legal maximum at that time.[32] It was not until 1729 that the less conservative Royal Bank of Scotland established a cash credit system, a major break-through, about which Lillie and Maxwell wrote: 'The commercial prosperity of Scotland, particularly during the eighteenth and early years of the nineteenth centuries, is in a large measure due to the introduction ... of the bond of credit, popularly known as the cash credit bond'.[33]

In the absence of an institutional system, however, it is clear from testaments of the Scottish merchants who were investing in local industries and from the huge number of personal and heritable bonds noted in the register of deeds, that in the seventeenth century, personal money lending was universal. 'Ockery', the charging of more than ten per cent interest in the early part of the century was illegal, however, and was prosecuted, an unusually high number of prosecutions - 350 in eight months - taking place in 1612.[34] From the highest in the land, to people of small means, money was borrowed for varying periods of time. After her husband, glass maker Edward Dagnia, died, for example, Joanna Coo borrowed £28 from James Cranstoun, merchant, on 18 October 1665, to be repaid before 2 February 1666, with a penalty of 10 merks for late repayment. The rate of interest was not specified.[35] At the other end of the scale, personal and heritable bonds for considerable sums were commonplace.

The origin of bills of exchange is obscure, but they were certainly in use in Scotland well before 1681, since an act passed that year provided for 'summary diligence upon foreign bills', [36] and this was extended in 1696 to inland bills. This remedy, available

only in Scotland, enabled payment of a debt to be enforced on pain of legal proceedings or sequestration.[37] Lillie and Maxwell go on to say that: 'gradually, as trade prospered, the use of such instruments increased, and in course of time they became a great consistuent in commercial credit and currency'.[38] Devine and Cummings consider that, by the 1720s, the bill of exchange 'had begun to serve the purpose of a cash medium, circulating for much longer periods than before and used to cover very small sums and transactions.'[39]

One apparently quite common practice, designed to avoid recourse to the law in order to resolve conflicts, was the use of arbitrators. In 1663, for example, when Robert Pape and glassmaker Edward Dagnia, were in dispute, each man chose someone knowledgeable to act on his behalf. The arbitrators were former bailies of Edinburgh, with relevant experience, and their decisions were registered with the Court of Session.[40] In 1695, articles of regulation concerning arbitration were imposed by the Scottish Parliament, to stop 'groundless and expensive pleas and processes in time coming',[41] so, clearly, the system was not without its problems. Nevertheless, it was accepted as useful; in 1746, article thirteen of the co-partnership agreement of the North Leith glassworks reads:

> That all Disputes that may arise touching the meaning of the above mentioned Articles or any other Dispute or Controversy that may arise amongst the Sharers and Adventurers in this present Manufactory shall be Determined by two Arbiters one to be Chosen by each of the Contending Parties or by ane Oversman to be Chosen by the said Arbiters in Case of Varriance whose Decision the whole Parties hereto oblidge themselves to stand to abide by and fullfill.[42]

Events leading to the Treaty of Union are well known, and still the subject of much debate. There is no doubt, however, that after 1707, the markets for industrial production changed, both through exposure to competitive products from England and through increased opportunities for export, created by access to the Americas in particular, a market previously limited by the English Navigation Acts. On the west coast, the first seeds of trade with the West Indies had been planted much earlier. Whyte has shown that 'in 1668 a company of 107 merchants was formed to trade with America', despite the Navigation Act,[43] and that in 1686 more than forty trading voyages went there.

Smout demonstrates that, although Edinburgh was still much the largest tax payer of all the burghs, by 1670 Glasgow had risen to second place, and by 1705 was paying 20% of the total, compared with Edinburgh's 35% and Aberdeen's 5%.[44] Glasgow's population is more difficult to estimate, but Smout describes her as 'a highly successful burgh which had developed in wealth and population at a greater rate than any other community in seventeenth-century Scotland.'[45] He goes on to list the new industries established there after 1660: three sugar refineries, a soap works, rope works, glass manufactory, hardware works, paper mill, and more, almost all set up and financed by merchants, 'the source of practically everything that is notable and enterprising in this notable and enterprising town'.[46] James Montgomerie, founder, with two other merchants, of the glassworks there in 1700, had, like his counterparts on the East coast, a finger in several pies, not all of them in Glasgow. He was also a partner in the gunpowder company at Canonmills, near Edinburgh; he owned ten shares in the Scots White Paper Manufacture; and was later a co-partner in the South Sugar House at Glasgow, as well as being involved with the Wester Sugar House.[47]

Smout's study is particularly interesting in his examination of the mechanics of becoming a merchant in Glasgow, all of whom were burgesses. Once a burgess, a Glasgow trader could deal locally in low-value wares, but it was also possible to sell linen cloth in England, and to trade with Ireland, thus enabling 'an enterprising man of small capital to pull himself up by his own bootstrings' and accumulate enough money to apply for full commercial privileges, and to become a guild brother. Once achieved, the status of guild brother conferred the right to sell all the many goods inported from the Low Countries, the Baltic and France. Smout goes on to analyse the activities of the enterprising citizens of Glasgow, and the emergence of a tight-knit community of families who achieved great wealth and prominence, concluding that it 'facilitated the formation and operation of merchant partnerships and joint-stock organisations, which are at this period often very informal simply because it is possible to do things within the kinship group without elaborate legal formality', although this very closeness did possibly stifle some risk taking.[48] Smout puts forward the hypothosis that, because historically there was an easy relationship between the merchants and craftsmen of Glasgow, unlike that of other Scottish burghs, and because social mobility was easier, there were greater opportunities for men of vision to achieve economic success. He concludes that it may have been the unique social structure of Glasgow which enabled her 'to grasp the opening opportunities of a new economic world represented by the international commercial expansion of the seventeenth century'.[49] It is an obvious extension of that conclusion to assume that the merchants

of Glasgow were well prepared for the challenges of post-Union commerce, the ramifications of which will be discussed in later chapters.

Recent reassessments of the commercial activities of merchants and others and the business methods they used during the pre-Union period, have confirmed that the industrial expansion of the later eighteenth century was built on a well-established foundation, much of which evolved during the seventeenth and early eighteenth centuries. The glass industry probably required more start-up capital than most, and had particular funding problems, not least because of the demands of its idiosyncratic technology and wage structure. It nevertheless exemplifies the willingness of men with venture capital, particularly merchants, to invest in a potentially lucrative business despite the hazards.

[1]'The Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D. 1612', *Ledger of Andrew Halyburton*, ed. C. Innes (Edinburgh, 1867), 288.
[2] *RPCS*, ix, pp. lxix; lxx.
[3] All the material concerning glass manufacture in this chapter will be discussed in greater detail and will be more fully referenced in later chapters.
[4] W.R. Scott, *Constitution and Finance of English, Scottish and Irish Joint Stock Companies to 1720* (1911, reprint New York, 1951), 115.
[5] Scott mistakenly calls him 'Sir John'.
[6] G. Donaldson, *Scotland: James V to James VII* (Edinburgh, 1965), 244.
[7] *ibid*, 244.
[8] Scott, *Joint Stock Companies*, 126.
[9] 'The Diary of Sir James Hope', *SHS Miscellany*, iii (1919), 126.
[10] *Journal of the House of Commons*, ix, 708
[11] *APS*, viii, 384.
[12] *APS*, vii, 262.
[13] T.C.Smout, 'The Anglo-Scottish Union of 1707, part 1. The Economic Background', *The Economic History Review*, xvi (1963), 456 n.3.
[14] *Calendar of Treasury Books*, xxii (1950), 122.
[15] J.J. Brown, 'The Social, Political and Economic Influences of the Edinburgh Merchant Elite, 1600-38' (Edinburgh University Ph.D. thesis, 1985), 175.
[16] Scott, *Joint Stock Companies*, 127.
[17] I. D. Whyte, *Scotland before the Industrial Revolution* (London 1995), 281.
[18] 'Diary of Sir James Hope', 139.

[19] WRH, CS21/447.

[20] NLS, MS1913. Antiquaries' papers. Scots White Paper Manufacture.

[21] See chapter 6 and appendix 1.

[22] T.M. Devine, *The Tobacco Lords* (Edinburgh, 1975), appendix, 177-84.

[23] T.M.Devine, *Exploring the Scottish Past* (East Linton, 1995), 32.

[24] P.L. Payne (ed.), *Studies in Scottish Business History,* (London, 1967), 136-51.

[25] *ibid*, 143.

[26] *ibid*, 144, quoting Bell, *Commentaries on the Law of Scotland.*

[27] NAS, GD305/1/164/46. Cromartie muniments.

[28] NAS, RD14/87/1747.

[29] NAS, RD12/41/955.

[30] NAS, RD12/26/624.

[31] H. Hamilton, *An Economic History of Scotland in the Eighteenth Century* (Oxford, 1963), 294.

[32] R. Saville, *Bank of Scotland A History 1695-1995* (Edinburgh, 1996), 17.

[33] J.A. Lillie and D. Maxwell, *The Mercantile Law of Scotland* (Edinburgh, 1949), 267.

[34] *RPCS*, ix, p. lxiv.

[35] NAS, RD14/6/245.

[36] Lillie and Maxwell, *Mercantile Law,* 192.

[37] *ibid,* 220.

[38] *ibid,* 192.

[39] Devine, *Exploring the Scottish Past*, 22.

[40] NAS, RD14/4/1237.

[41] Lillie and Maxwell, *Mercantile Law*, 404.

[42] NAS, RD14/87/1747.

[43] Whyte, *Scotland before the Industrial Revolution*, 282.

[44] T.C. Smout, 'The Glasgow merchant community in the seventeenth century', *SHR* xlvii (1968), 53.

[45] *ibid*, 55.

[46] *ibid*, 57.

[47] See chapter 11 and appendix 1.

[48] Smout, 'Glasgow Merchant Community', 68.

[49] *ibid,* 70.

CHAPTER 3

CONSUMPTION

In view of the marketing problems discussed in the last chapter, it would be helpful to examine briefly the ownership of different types of glass in Scotland, particularly during the seventeenth century. It is, however, difficult to make a realistic assessment of the quantity of glass in the home, since documentary material is limited, and what survives provides only fragmentary evidence, usually of the purchases of the wealthy. Inventories and household receipts can only offer the occasional 'snapshot', showing the possessions, or purchases, of individual households, at a particular moment in time, although it is possible to draw some more general conclusions, particularly from the study of testaments.

Glass was a luxury item, and ownership presupposed having disposable income over and above that required for the necessities of life. Gibson and Smout have shown that it was not until the end of the eighteenth century that working people in Scotland were able to buy such luxuries as tea, sugar and imported fabrics,[1] and that in the seventeenth century wages were often barely at subsistence level, while many were paid, at least partly, in kind. It is, therefore, safe to say that the poorest sections of the community owned no glass at all. On the other hand, it is possible to demonstrate that in the early part of the century, the obviously wealthy probably possessed glass in their windows, some bottles, and perhaps a few drinking glasses, while by 1700 they were likely to own a considerable number of bottles, rather more drinking glasses and several mirrors.

It is also difficult to assess the volume of consumption of the middling classes - the merchants and those in the burgeoning professions. J.J. Brown, in his thesis examining the Scottish merchant elite,[2] points out that they were involved in considerable and successful commercial activity up to the 1640s. The consequent growth in disposable income led, for example, to greatly increased wine consumption within Edinburgh, while imports, of luxury goods as well as necessities, reached 'unprecedented levels' in the 1630s.[3] Gibson and Smout point to the increasing indebtedness of the Scottish aristocracy to Edinburgh merchants, debts which 'grew steeply in the period 1600-1630',[4] concluding that, for the first time, the merchants were sufficiently affluent to accommodate them. It would seem reasonable to assume, therefore, that those merchants, and the lawyers who were becoming increasingly affluent as their influence

grew,[5] living as they did in the capital, were probably also consumers of glass to some extent.

In the less fashionable areas, however, glass ownership appears to have been minimal among all levels of society. Winifred Coutts in her analysis of the testaments in Dumfries between 1600 and 1665, shows that household glass was virtually non-existant among all classes there.[6] One man, minister Simon Johnston, who 'ran the best equipped establishment',[7] owned a mirror valued at six shillings, and one woman may have been owed some glasses. And that was all.

The port books, too, are spasmodic, and can only provide evidence of which goods entered a particular port in a particular year, they cannot be used as indicators of consumption. 'The Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D. 1612',[8] lists a range of glass items and their estimated value, on which an import tax of five per cent was to be levied. It cannot, however, be assumed that all these items were regularly imported, since the list was designed to be a 'catch-all', to make sure that nothing was allowed in without payment, the funds being much needed by the exchequer.[9]

Social historians emphasise the scarcity of drinking glasses, even in the eighteenth century. Plant, for example writes 'drinking glasses were scarce and (as in England) a single glass might go round the whole company'.[10] Adam Petrie in his *Rules of Good Deportment*, first published in Edinburgh in 1720, admonishes his readers to:

> be sure to wipe your mouth before you drink, and when you drink hold in your Breath till you have done. I have seen some colour the Glass with their Breath, which is certainly very loathsome to the Company to think they must drink out of the same Glass.[11]

Petrie is, however, talking about the custom of giving toasts, not a shortage of glasses. The number of drinking glasses in a household was indeed very limited, but it is likely that the custom of sharing a single glass was, in fact, a social convention, rather than an economic necessity, at least by the eighteenth century. The Scottish way of proposing toasts was graphically described by the French traveller, geologist Faujus de Saint Fond, when writing of the four o'clock dinner he ate at the house of a minor laird, Mclean of Torloisk, on Mull in 1784. The meal was substantial and the

house well appointed. After listing ten courses, all served by the hostess, St. Fond continues:

> There is no delay in drinking the first toast; it is again the mistress who is charged with this ceremony. A large glass filled with port-wine is presented to her; she drinks the first to the health of all the company, and passes the glass to one of the persons who sit next to her; and thus from one to another the glass makes the round of the table. The side-board is furnished with three large glasses, one for beer, another for wine, and the third for water, when any one asks for it unmixed, which is not often. These glasses are common to all at table; they are never rinsed, but merely wiped with a fine linen cloth.

He goes on to say that:

> The cloth is removed after the dessert, and a table of well polished mahogany appears in all its lustre. It is soon covered with fine decanters of English glass, filled with port, sherry, or Maderia, and with large bowls of punch. Small glasses are then distributed in profusion to every one.[12]

Although writing much later than the period under discussion, St. Fond's description raises the question of whether the sharing of a vessel was also customary in the seventeenth century, (in a manner somewhat reminiscent of communion) or whether, in fact, the social custom actually derived from the shortage of drinking vessels.

St. Fond was describing a genteel occasion, in mixed society. A rather rowdier occasion described by the Earl of London in 1700, confirms the sharing of one glass,[13] and might provide one explanation for the number of bottles regarded as a necessity by the end of the seventeenth century!:

> Galloway brought some botles of very good wine so that we drunk our friends health and tosted ourselves prittie handsome. Your honors health was not forgot all the famous tosts were drunk and because we had but one glass wee broke our botles in honor of them as they were emptied.[14]

The available evidence does indicate that the ownership of drinking glasses throughout the seventeenth century was generally extremely limited, with the exception of the very highest echelons of society. During preparations for the coronation of Charles I in 1633 a list was prepared of the glasses at Holyroodhouse. It included a dozen 'big beare glasses with long stalkes in bell fashion', one hundred

and four 'big beare glasses with short stalkes of sundrie fashiones', a further twenty-four beer glasses with covers, one hundred and twenty-three wine glasses 'of sundrie sortis', six broken glasses and twelve water glasses, a grand total of two hundred and forty-seven.[15] This was not sufficient for the festivities, however, and ten dozen 'glassis of the best fashione' and twenty dozen bottles were listed among various goods to be brought from England.[16]

At the end of the century, and, again, at the top of the social scale, Rosalind Marshall shows that the Duke and Duchess of Hamilton gave a series of banquets at Holyroodhouse, when the duke was the King's Commissioner to Parliament in 1693. In addition to those she already owned, the duchess bought 'four dozen new ale glasses, three and a half dozen wine glasses, three dozen sack glasses and two and a half dozen coarse glasses.'[17] But the Hamiltons were at the far end of the social continuum, and their consumption cannot be regarded as representative, even of their own social milieu. The numbers of glasses bought were usually much smaller: on 4 December 1686 the Earl of Tweedale was, for example, invoiced for '6 bear glasses at £3.0.0, 3 ditto at £1.10, 6 Sacke at £2 8s.'.[18]

The inventories of the less wealthy support the view that the ownership of drinking glasses was small. An inventory of movable goods belonging to the late Sir Lauchlin McIntoshe of Torcastle, at the time of his death in 1622, includes silver and brass, in addition to tin stoups and iron pots, but no glass or pottery items.[19] Fifty-five years later a similar inventory of the household utensils of Sir William of Braco, dated 5th September 1677, includes a quantity of linen, some silver, and quart, pint, choppin and mutchkin bottles of glass, but, again, no drinking glasses.[20] The logic of such priorities is unarguable - money spent on silver, brass, household linen and fine fabrics provided durable luxuries. While window glass provided obvious advantages, and bottles were a practical necessity, drinking glasses were fragile, and their role could be performed by other materials.

Marshall is emphatic that the customs records prove a greater ownership of drinking glasses than social historians acknowledge, and shows that in November 1682, a ship docking at Blackness harbour carried 850 Flanders drinking glasses, 710 coarse glasses and 200 glasses of other kinds.[21] The cargo of a single ship, cannot, however, be taken as typical. Even in the early eighteenth century there is little expectation of drinking glass ownership. Rosalind Mitchison describes the inventory of a relatively prosperous tenant farmer in East Lothian in 1708, who owned twenty-one pewter

plates, two ashets, four dozen trenchers and a dozen wooden trenchers, and who '*even* had some drinking glasses'.[22]

A more likely glass product to appear in seventeenth-century homes was the bottle. Evidence from excavations of contemporary glasshouses, and from household accounts in archives, shows that a considerable proportion of the vessel glass used by families was connected with apothecaries' products. At Kimmeridge, Dorset, where a furnace operated between 1618 and 1623, 44.3% of the vessel-equivalent shards were estimated to belong to storage vessels, either bottles, flasks or phials.[23] A more recently published excavation, at Haughton Green near Manchester (1615-1653)[24] estimates that 58.5% of the total vessel-equivalents in green glass were bottles, flasks or phials, although it was impossible to distinguish between the bases of more or less straight sided bottles and drinking vessels, which constituted the largest group (41.98 vessel equivalents,[25] so the figure is not reliable in terms of separating them. (Fig.8). Four per cent of the total were urinals, used from medieval times for urine analysis by physicians.[26] Drinking vessels constituted 36.95% of the total, most of them beakers, 17% being plain, by far the largest proportion. There are too many statistical difficulties in quantifying the products of these glasshouses to draw any firm conclusions, but the analyses can reasonably be taken as some indication that a considerable proportion of the market demand was for containers. Godfrey points out that for some purposes, glass was the most suitable material, in preference to pottery or metal - especially when the contents were acids and chemicals. Glass also, of course, allows the volume of the contents to be easily measured and examined when, for example, analysing urine.

It is evident from surviving accounts that apothecaries supplied many of their wares in bottles or glasses, which they listed in their charges. Accounts for the Laird of Innerpeffer, for example, include in 1640 'a bottle of the purging dyet drinke, and hott oyles and Unc[tions] in a glass'.[27] Bills covering June 1652 to June 1655 list: 'halfe ane Muchkin of Rosewater in a glas...10s; four unces of pectorall syrups in a glas...£1 2s; four unces of Oyle of Lillies in a glas..17s 6d; four unces of Stomach oyles in a glas...£1.[28] Helen Dingwall confirms that many items were supplied by apothecaries in a glass, or 'in a pig' (pottery container), and that 'there was clearly a fair turnover of glassware as well as drugs', although some of the containers may have been re-used.[29] Her research shows that apothecaries held stocks of glass and earthenware containers, both for the storage of their own materials and in which to supply their customers.[30] Similar accounts can be found in the eighteenth century. A surgeon's

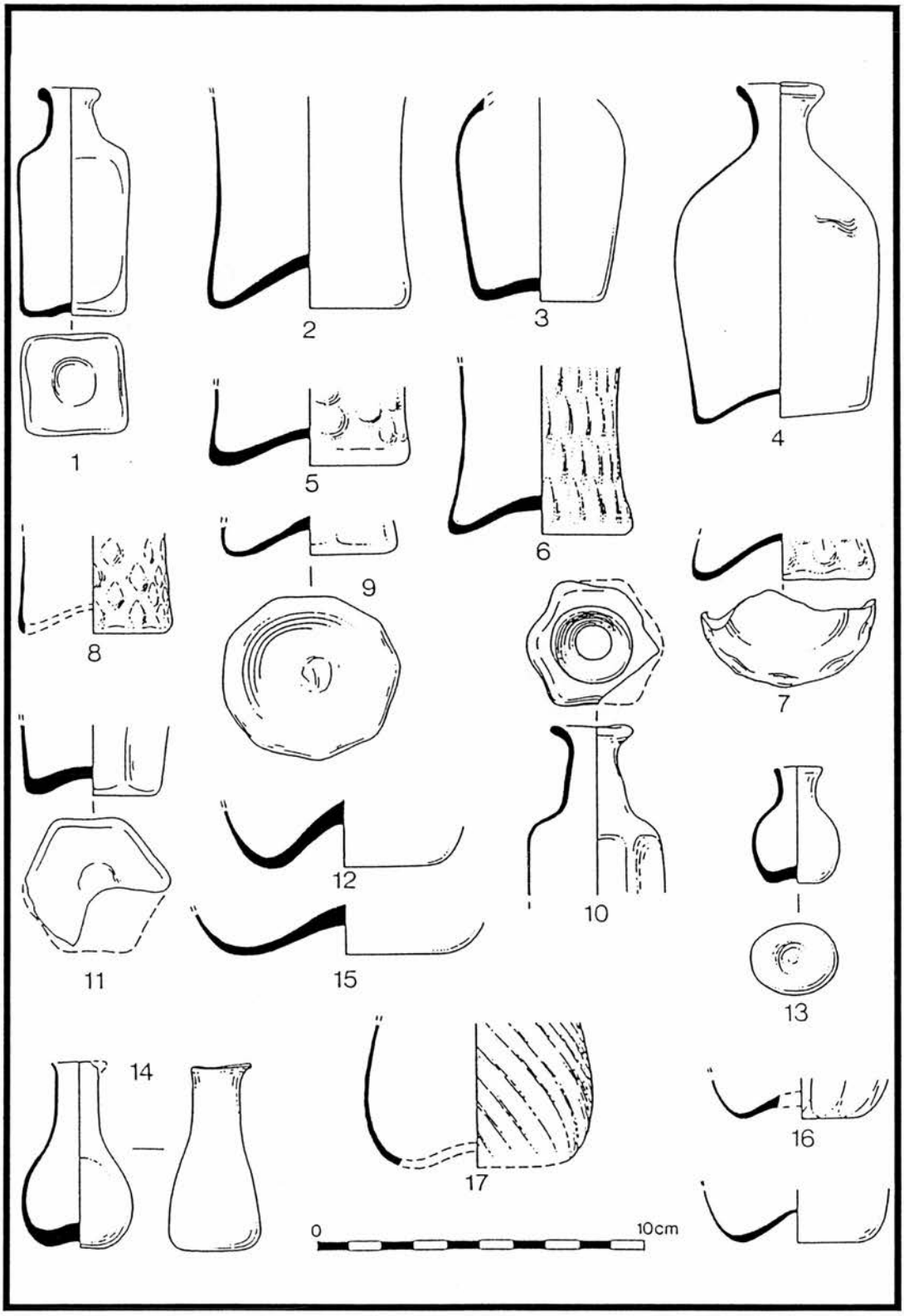


Fig.8. Green vessel glass found at Haughton Green.

bill for 1713 includes 'an ounce and half Syrup white poppies a glass; Plantain water a mutchkin, a bottle; Balsam of Peru a drachm, a glass; a vomit a glass.'[31]

Perfumers, too, used glass containers and they also sold drinking glasses. A bill in the Yester Papers, dated 1692-3 from John Crichton, perfumer, lists a pair of large water bottles at 8s, two oil and vinegar glasses at 2s 4d, a dozen large wine glasses, costing 8s and half a pound of hair powder.[32] Another from the same man includes four beer glasses for 4s, four wine glasses for 2s and two 'sillebub' glasses for 2s, as well as perfume and a bottle of orange flower water.[33] Since the market was small, the suppliers of drinking glasses were usually those whose main business was in a connected, but different, trade. An account in May 1648 includes ham, ginger, two beer glasses at 12s and '3 wyne glasses...£1 7s 0d'.[34] Specialist retailers did not appear until the latter half of the eighteenth century, and it remained common, particularly outside the main centres of population, for ceramics and glass to be part of the stock of grocers and other dealers well into the nineteenth century.[35]

The bottles referred to above were in a long tradition of glass bottle-making, light, thinly blown, pale in colour, and usually small in size.[36] They were often mould-blown with square or hexagonal bases, and were sometimes patterned with vertical ribbing.[37] Larger ones were frequently cased in wicker or leather, and could be used as decanters for serving wine, which was bought and stored in wooden cask, until the new 'English bottle' came into use.

Accounts for wine bottles in Scottish papers are available towards the end of the seventeenth century, when the Leith Glassworks was providing for the local market, but they are not easy to find for earlier dates. A slightly later, but interesting, Scottish household inventory, 'The Inventor of plenishing in Thunderton's lodging in Duffus, May 25, 1708', was transcribed and printed by E. Dunbar Dunbar in 1865. It shows the variety of glass objects in an early eighteenth-century Laird's household of fairly modest size. These included looking glasses in the 'Strypt Room' (two), the Green Room, the 'Moyhair Room' (two), 'my Lady's Room' and the laird's closet. In another closet were seventeen drinking glasses, a glass tumbler and two decanters, oil and vinegar cruets and a urinal glass. But most striking is the 'Account of Bottles in the Salt Cellar' on 1st June 1708, each of them valued at one penny:

Of sack, five dozen and one	5 1
Of brandie, three dozen and three	3 3

Of vinegar and aquavitie, seven			7
Of strong ale, four dozen and four		4	4
Of other ale, nine dozen		9	0
In the ale cellar, fifteen dozen and ten	15	10	
In the hamper, five dozen empty		5	0
In the wine cellar, nine with Inglish ale			9
White wine, ten			10
Of brandy, three			3
With brandy and surop, two			2
With claret, fifteen		1	3
With mum, fifteen		1	3
Throw the house, nineteen		1	7
There is in all, forty nine dozen and two	49	2	
And of mutchken bottles, twenty five	2	1[38]	

As well as showing the range and volume of alcohol stored in the lodging, the list contains 590 bottles, a quantity contrasting significantly with the number of drinking glasses the household possessed. These relative proportions are born out by another, very detailed, inventory of a highland gentleman of 1731. He owned 520 bottles, six salts, 'twentie drinking Glasses big and little valued att Twentie four pound', one 'hanging Mirrour', one Table Mirrour' and one 'standing Mirrour'.[39]

The presence of several mirrors in these two inventories indicates the significant change in their availability which occurred from the last quarter of the seventeenth century. In the early years of the century, looking-glasses were small, scarce, and expensive, and many were made of speculum, a highly polished alloy often called steel, rather than glass. They would usually be in the form of a hand-held looking-glass, rather than the later wall-mounted or standing variety, mentioned above. All the plates used for mirrors were imported, those of crystal being valued at roughly twice those of speculum. The customs list of 1612 includes small, medium and large sizes in both materials, those 'of steill small the dozen' costing £4, while the crystal equivalent was listed at £8. The large crystal plates were relatively cheaper though, the steel ones costing £8 the dozen, while crystal cost £12.[40]

Geoffrey Wills, in his book *English Looking-glasses*, describes some exceptional examples in the houses of the very wealthy in the sixteenth-century, but the starting date for his history is 1670 since 'it is not until the later seventeenth century that glass

became common enough in large sizes for its popularity to be assured as a wall decoration.'[41] After about 1690, looking glasses consisting of three separate sections, began to be placed over the fireplace and pier-glasses were positioned between the windows of fashionable houses. By 1700, mirrors were an expected part of the furnishings for the wealthy. Lady Margaret Hope spent £3,152 16s on plenishings for her son's house at Nithrey in 1695, of which £146 13s 6d was for mirrors. Her account lists 'two big looking glasses and 4 little ones, £84 13 06; frames to those glasses and a table and stands £60; to the man that came out with the frames of the glasses £2'.[42] At the lower end of the market were simply framed wall mirrors and those on stands, designed to be placed on a table.

The best documented area of glass consumption in seventeenth-century Scotland is that of window glass, particularly in the archives of the wealthy landowners, which record the building of fine new houses, and repairs to older ones, including the work of the glaziers.

Early travellers in Scotland gave eye-witness accounts of the absence of glass in town houses. Brereton, describing Edinburgh's High Street in 1636, commented on 'the want of fair glass windows, whereof few or none are to be discerned towards the street'.[43] Travellers also recorded the change which took place during the century. Thomas Morer, discussing the same city in 1689, wrote:

> Their old houses are cased with boards, and have oval windows (without casements of glass), which they open or shut as it stands with their conveniency. Their new houses are made of stone, with good windows modishly framed and glazed.[44]

There are also comments on the fashion for partial glazing:

> In the best Scottish houses, even the king's palaces, the windows are not glazed throughout, but the upper part only, the lower have two wooden shuts or folds to open at pleasure, and admit the fresh air'.[45]

The glazed sections were fixed, the lozenges (diamond-shaped piece of glass) held by lead strips and mounted in an iron frame. A painting by Roderick Chalmers depicting the Edinburgh trades in 1720, clearly shows a window panel of this sort.[46] Change in both the design and materials used for windows was, of course, gradual; while the very wealthy followed the latest English fashion, oiled paper was still sometimes used as an alternative to glass as late as 1732.[47]

Burgh accounts record the cost of installing and maintaining the glass in their public buildings. The records for Ayr list regular payments to the glazier, including work on the kirk and the tolbooth, through the sixteenth and into the seventeenth century. In 1550-51 twenty-two feet of glass at 2s 8d per foot were installed in the tolbooth, and regular glazier's fees of £1 6s 8d are listed.[48] In 1615-16, George Liddel, glazier, was paid £2 4s to install seven-and-a-half feet of glass in the kirk, while his fee for maintaining the glass there was £4.[49] It is, perhaps, some indication of the increasing use of glass during the seventeenth century that Edinburgh appointed James Towris to be the first 'Touns master glassinwright' in 1646, to join the town mason, wright and plumber, who were already *in situ*.[50]

The *Accounts of the Masters of Works*, published up to 1649, provide a useful insight into the window glass used in the royal palaces, and its price. They also make it clear that, wherever possible, old glass was re-used. The account of glasswork at the Abbey of Holyroodhouse in 1611 lists:

> Item in the fore wark above the yet two wondokes taken downe and mended with ane leven (sic) feit of new glas and throttene of auld glas sett into new leid, at fourtie penneis the feit of new and twentie penneis the auld, is lviii s vii d.[51]

The accounts also show that glass was used in humble rooms, such as the pantry and 'my lords kitching', as well as the grander apartments like the queen's hall and the king's chamber.[52]

Window glass was normally charged by the square foot, although there is one entry in 1611 for 'xxviii lossones at xiid the pece'.[53] The definition of the foot appears to have been open to personal interpretation and considerable abuse, however. The matter was brought up at the General Convention of Royal Burghs at Linlithgow on 7 July 1624, when it was decided to fix a standard foot measure at the following general convention.[54] This was duly done on 5 July 1625 at Glasgow.[55] All burghs were ordered to publicise the new standard, which the magistrates were to enforce as they thought fit. On 3rd March 1626, Edinburgh glasswrights 'Andro Clerk, Clement Toures, Johne Fokkert, Thomas Bennett, Gawin Chirrielaw and Williame Rodger' compeared before the burgh council with their measures, which clearly did not comply with the new regulation, because the council

> ordanit [them] to be brokin and intimat to theme the act of borrowis maid at Glasgow in Julij last anent the measure of the worke whiche

> thai ordanit to be of the lenth of ane full quarter of ane elne and ordanit theme to conforme themselffis.[56]

In 1611 the price charged for a foot of new glass was 3s 6d; by 1617, however, glasswright George Storie was charging 4s a foot at Edinburgh Castle. By 1628, the cost had risen to 5s, a price also paid in 1649.[57] It is likely that some of the twenty-five per cent rise between 1617 and 1628 was accounted for by the prohibition of imported glass in 1621 and, perhaps, the imposition of the standardised foot mentioned above. There is no indication of the source of most of the glass used, although in 1633 nineteen cradles of French glass were transported to Holyrood.[58]

When commissioners were appointed to examine the production of glass in England and Scotland in the 1620s, it was the supply and quality of window glass which concerned them most. There was controversy about the thickness, and therefore strength, of the glass, especially that from Scotland, and the frequent repairs listed in accounts bear witness to its fragility.[59] It appears to have been common practice in Scotland for wealthy landowners to arrange a contract with a local glazier to maintain their windows on a regular basis. In 1647, for example, a contract was agreed between the Earl of Lauderdale and James and John Wauch, glaziers, for the upkeep of windows at Lethington, Thirlestane and Brunstane.[60] The cost of window repairs and replacement could be considerable as the Saltoun papers show, £474 16s being spent for that purpose between 1647 and 1650.[61]

In the 1660s sash windows were first used in England, a fashion quickly emulated by wealthy Scots.[62] The Duke of Lauderdale paid John Wauch, a glazier in Tranent, to provide the glass for his sash windows in the 1670s.[63] In the 1690s London glaziers were engaged to install sash windows in Hamilton Palace.[64] By 1719 they were already much more common, although still a feature of note in a house.[65] Such amenities were by no means universally available, however. In 1708 a correspondent writing to someone in England from Drumlanrig, said:

> Davies does not like the Scotch houses, the only windows are those to let out the smoke; the fire is made in the middle of the house, and they sit round it, and talk, but cannot see each other for the smoke.[66]

Crown glass was used for the important windows in most large houses,[67] although plate glass, like that in mirrors, was also occasionally employed, despite being extremely expensive. Even well into the eighteenth century, window glass was obviously still prone to faults, however, as several letters of 1733 illustrate. When

Lord Oxford ordered crown glass from Newcastle through an Edinburgh merchant, his requirements were clear: he wanted it to be of good quality, the panes cut at Newcastle, (which was not the normal practice), and he wanted it quickly - his workmen were waiting. He wrote:

> All I desired ... was to get it of the Crown Glass and right chosen, no Greenishness nor Blisters in it, and no ways cassen, and in case you could get no Glazier to buy the Remains so as to make [?each] peen when cut, come to Seven pence, to let me know presently. [68]

Plate glass was not a luxury, but a necessity, in coach windows, being thicker and stronger than ordinary window glass, and more able to withstand the stresses of use on rough roads. This, too, was expensive and even the Duke of Hamilton economised by re-using the glass from an older coach in a new one he had built.[69]

Hour glasses are one of the items which appeared on the list of imports in 1612, but were being made in Scotland by 1682. They were used in churches and in the glasshouses themselves,[70] being a relatively inexpensive means of measuring the passage of time.

Ownership of most types of glass increased steadily through the eighteenth century, as might be expected. The range of wares available also expanded greatly to meet the demands of an increasingly sophisticated and diverse market, although glass remained a luxury item. Edinburgh's New Town bears testimony to the huge areas of window glass in use by the 1770s, while a price list published by the Leith glassworks in 1797 contained no less than 156 items, ranging from bird fountains to eye glasses, and from salts to fly traps.[71] Glass products had progressed from a small number of objects owned by very few Scots, to a wide range of items, forming an integral part of the conspicuous consumption of the upwardly mobile in Scottish society.

[1] A.J.S. Gibson and T.C.Smout, *Prices, Food and Wages in Scotland 1550-1780* (Cambridge, 1995), 340.

[2] J.J. Brown, 'The Social, Political and Economic Influences of the Edinburgh Merchant Elite, 1600-38' (Edinburgh University Ph.D. thesis, 1985), 144.

[3] *ibid*, 110.

[4] Gibson and Smout, *Prices*, 9.

[5] M. Lynch, *Scotland: A New History* (London, 1991), 254.

[6] W. Coutts, 'Social and Economic History of the Commissariot of Dumfries from 1600 to 1665 as disclosed by the Register of Testaments' (Edinburgh University M.Litt. thesis, 1982).

[7] *ibid*, 57.

[8] C. Innes (ed.), *Ledger of Andrew Halyburton 1492-1503* (Edinburgh, 1867).

[9] *RPCS*, ix, 288.

[10] M. Plant, *The Domestic Life of Scotland in the 18th Century* (Edinburgh, 1952), 44.

[11] Adam Petrie, *Rules of Good Deportment or of Good Breeding* (1720, reprint Edinburgh, 1835), 86.

[12] Faujus de Saint Fond, *A Journey through England and Scotland to the Hebrides in 1784* (Glasgow, 1907), 71-2.

[13] He may, of course, have meant one glass *each.*

[14] NAS, GD124/15/215. Mar and Kelly papers. Earl of London at Castle Kennedy, to Earl of Mar, 19 Sept. 1700.

[15] NAS, E.34/52/13. Exchequer records. Note of glasses in Holyruidhaus, 8 March 1633.

[16] NAS, E.34/52/15. Exchequer records.

[17] R. Marshall, *The Days of Duchess Anne: Life in the Household of the Duchess of Hamilton 1656-1716* (London, 1973), 102.

[18] NLS, MS.14636 f.47. Yester papers. Account, the Earl of Tweedale to Robert Smith, 4 Dec. 1686.

[19] NAS, GD176/402/14. Mackintosh Muniments. 'Inventory of such moveable goods and gear belonging to the late Sir Lauchlin McIntoshe of Torcastle at the tyme of his death, 1622'.

[20] NAS, GD190/3/175/12. Smythe of Methven papers. Inventory of household utensils and plenishings of deceased Sir William of Braco, 5 Sept. 1677.

[21] R.K. Marshall, 'The House of Hamilton in its Anglo-Scottish Setting in the Seventeenth Century', (Edinburgh University Ph.D. thesis, 1970), 282.

[22] R. Mitchison, *Life in Scotland* (London, 1978), 64, my italics.

[23] D. Crossley, 'Sir William Clavell's Glasshouse at Kimmeridge, Dorset: The Excavations of 1980-81', *Archaeological Journal,* cxliv, (1987), 356.

[24] R.H. Vose, 'Excavations at the 17th-century glasshouse at Haughton Green, Denton, near Manchester', *PMA,* xxviii (1994).

[25] *ibid*, 22.

[26] E. Godfrey, *The Development of English Glassmaking 1560-1640* (Oxford, 1975), 14.

[27] NLS, MS.16852 f.110. Saltoun papers.

[28] NLS, MS.16853 f.142. Saltoun papers.

[29] H. Dingwall, *Physicians, Surgeons and Apothecaries* (Edinburgh, 1995), 204-5.

[30] *ibid*, 198.

[31] NLS, MS.16854 f.93. Saltoun papers. It should be noted that the term 'a glass' clearly refers to a bottle, probably a small one usually known as a vial, since the mutchkin is specified as a bottle, rather than a drinking glass, in modern usage.

[32] NLS, MS. 14636 f.14. Yester papers.

[33] NLS, MS.14636 f.4. Yester papers.

[34] NLS, MS.16852 f.190. Saltoun papers.

[35] J. Turnbull, 'The Trade between the Staffordshire Potteries and Scotland, 1760-1840', (Staffordshire University degree dissertation, 1992).

[36] Godfrey, *English Glassmaking*, 223-9.

[37] R.J. Charleston, *English Glass and the Glass used in England, c.400-1940* (London, 1984), 91.

[38] E. Dunbar Dunbar, *Social Life in Former Days* (Edinburgh, 1865), 205-13.

[39] Testament of Alexandar Robertson of Faskally, L. Leneman, in *Living in Atholl 1685-1785* (Edinburgh, 1986), 71.

[40] C. Innes, (ed.) *Ledger of Andrew Halyburton*, citing 'The Book of the Rates and Valuation of Merchandises in Scotland A.D. 1612', (Edinburgh, 1867), 309.

[41] G. Wills, *English Looking-Glasses* (London, 1965), 16.

[42] Hopetoun House mss, bundle 2786, 'The account of the household plenishing bought by my Lady Margaret Hope for her sons use for the house of Nithrey 1695'.

[43] P.H. Brown (ed.), *Early Travellers in Scotland* (Edinburgh, 1891), 139.

[44] *ibid*, 279.

[45] *ibid*, 231.

[46] Chimney piece of the Joint Incorporation of Wrights and Masons of Edinburgh. Illustrated in D. Macmillan, *Scottish Art 1460-1990* (Edinburgh, 1990), 84.

[47] NRA(S) 332, Hamilton muniments series 3, C3 1969. Alexander Inglis to William Wood ordering 3 quires of paper to be oiled for use in windows.

[48] G.S. Pryde (ed.), *Ayr Burgh Accounts 1534-1624.*

[49] *ibid*, 112.

[50] *Edin. Recs. 1642-1655*, 105.

[51] *Accounts of the Masters of Works, i, 1529-1615*, ed. H.M. Paton (Edinburgh, 1957), 338.

[52] *ibid*, 340.

[53] *ibid*, 331.

[54] J. D. Marwick (ed.), *Records of the Convention of the Royal Burghs of Scotland, 1615-1676,* iii (SBRS, 1878), 160.

[55] *ibid,* vi, 186.

[56] *Edin. Recs. 1604-1626,* 300.

[57] *Accounts of the Master of Works, ii, 1616-1649,* eds. J. Imrie, and J.G.Dunbar (Edinburgh, 1982), 431.

[58] *ibid,* ii, 313. French glass appears to have been particularly desirable.

[59] Godfrey, *English Glassmaking,* 206.

[60] NRA(S) Survey 832, 11. Lauderdale papers.

[61] NLS, MS 16854 f.48. Saltoun papers. Accounts.

[62] Marshall, *Duchess Anne,* 194.

[63] J. G. Dunbar, 'The Building Activities of the Duke and Duchess of Lauderdale, 1670-82, *Archaeological Journal,* cxxxii, (1975), 202-30. The tombstone of Thomas Wauch, glazier in Tranent, is illustrated in chapter 6.

[64] Marshall, *Duchess Anne,* 203.

[65] *Edinburgh Evening Courant,* 5-9 Feb. 1719. Advertisement for public dwelling in Aberbrothock, including 'a handsome Dinning-Room sixteen Foot and a half square with four large Sash-Windows'.

[66] HMC Report V(i), 347. Letter dated 29 April 1708.

[67] In 1664, the Duke of Hamilton ordered 'Normandy' [crown] glass for Hamilton Palace. (Marshall, *Duchess Anne,* 194).

[68] NAS, RH15/54/5. Lord Oxford at Cranston to Edward Burd, merchant in Edinburgh, 5 March 1733.

[69] Marshall, *Duchesse Anne,* 155.

[70] Merrett, *The Art of Glass,* 249.

[71] Kirkcaldy Public Library, Item no. 47/11, 'Prices of Flint Glass, manufactured by the Edinburgh Glass-house Company'.

CHAPTER 4

THE FOUNDATION OF THE SCOTTISH GLASS INDUSTRY - THE HAY PATENT.

The establishment of a glass industry in Scotland owes much to the turbulent politics of the English industry during the period in which Sir Robert Mansell (d.1652) was trying to consolidate his monopoly. This, in turn, was directly related to the change from wood-burning to coal-burning furnaces. The history of this period is well documented by Eleanor Godfrey in her book *The Development of English Glassmaking 1560-1640*,[1] and, following a very brief summary, only those aspects which affect Scotland will be discussed here.

The controversial question of the proliferation of patents of monopoly during the second half of the sixteenth and the first half of the seventeenth centuries has been discussed at some length by economic historians.[2] The glass industry is usually one of those cited as an example, generally unfavourably, although Godfrey is less condemnatory. Whatever the rights and wrongs, much time, effort and money was put into the establishment of coal-burning furnaces and control of the market by Mansell and into schemes to oppose him by exponents of wood-burning glasshouses and a more open market.

Until the early seventeenth century the English glass industry was divided into two separate strands: the forest glass furnaces, scattered over the wooded areas of southern England, particularly the Weald[3] making window and green glass, and a London based crystal glassworks, making fine vessel glass in the Venetian style.

The first English glass patent, dated 8 September 1567, had been granted to Jean Carré, a Calvinist from Antwerp, and Anthony Becku, a merchant, giving them the exclusive right to make window glass, both broad and crown, for twenty-one years.[4] Carré employed many Huguenot glassworkers over the ensuing years, including Pierre and Jean de Bongard (Peter and John Bungar), brothers from a prominent Normandy family making crown glass. By October 1568, Carré had established three furnaces, including, in addition to those making green glass, the crystal glassworks in London.[5] He died in 1572 and the patent lapsed through non-compliance. The continued flight

of religious refugees from Northern Europe ensured that more green glasshouses were established and operated in southern England.

Meanwhile, at the time of Carré's death, his crystal glassworks, at the Crutched Friars in London, was managed by a protestant Muranese glassmaker, Giacomo Verzelini, who had spent many years in Antwerp. He applied for and, despite local opposition, obtained a patent on 15 December 1574, granting sole rights to make and sell Venetian-style glass, and prohibiting imports, for twenty-one years.[6] In 1575, Verzelini's glassworks was destroyed by fire, but he rebuilt it and continued, with the help of his sons, to operate with considerable success.

Three years before the expiry of Verzelini's patent and despite his lack of connection with, or knowledge of, the glass industry, Sir Jerome Bowes, a courtier and soldier, was granted a similar patent on 1 February 1592,[7] to run for a period of twelve years from the expiry of Verzelini's patent in December 1595. It was renewed in 1606 for a further period of twenty-one years.[8] Bowes was not personally concerned with the glass production, which was in the hands of his assignees William Turner and William Robson.[9] Robson became the sole operator of the glass monopoly from 1605 and a period of extensive litigation to protect his rights culminated in his total control of the crystal glass industry as 'the first English-born glass monopolist' by 1612.[10]

Meanwhile the forest glassmakers had been experiencing difficulties in obtaining sufficient supplies of wood near sites suitable for their trade, close to river transport. They were, of course, in competition with the iron smelters, who consumed huge quantities of charcoal, in a time of increasing concern for the depletion of forests. As a result, there was migration to the more wooded areas of Gloucestershire, Lancashire and Cheshire, and a marked increase in the cost of fuel.[11] Despite the shortage of wood for fuel being particularly marked in the Weald, members of all the immigrant glassmaking families remained in that area, supplying the London market, including Flemish vessel-glass makers and window-glass makers from Normandy and Lorraine.[12] In 1589 George Longe, glassmaker, in a petition to Lord Burghley, claimed that there were fourteen or fifteen glasshouses in England.[13]

In the early years of the seventeenth century, a window-glass maker, Isaac Bungar (Bongar, Bungard), son of Peter, the immigrant from Normandy mentioned above, attempted to gain control of the market through commercial, rather than legal, means. He had, in 1596, entered into a contract with a London goldsmith called Thomas

Lawrence, who also acted as a wholesaler in glass.[14] Lawrence appeared to be controlling the supply of Weald glass in order to maintain prices, a technique subsequently emulated by Bungar. In conjunction with a London dealer, Lionel Bennett, and helped by the close family ties he had with other window glass makers who co-operated with him, Bungar managed to acquire a monopoly of the London market, to the great consternation of the glaziers.[15] Isaac Bungar was himself the largest window-glass producer in the Weald, owning two furnaces, with interests in others.[16] He had been born in England, so could own land, and he acquired considerable areas of woodland,[17] thus ensuring supplies and protecting the glass makers from local opposition.

By 1610, however, the need to explore the use of an abundant and less environmentally sensitive fuel - coal - was apparent to those concerned with English industrial expansion, not least in the glass trade. Godfrey describes the change from the use of wood to that of coal as 'a most significant occurrence in the English glass industry.'[18] Sir Robert Mansell was closely involved with this transition, while Isaac Bungar and others, not surprisingly, implacably opposed it, to the eventual benefit of the Scottish glass industry.

The first patent for the sole right to erect coal-burning furnaces for the production of a wide range of industrial products, from brewing to brick making, as well as refining and melting glass, copper and other metals, was granted on 28 July 1610 to Sir William Slingsby and others, for twenty-one years.[19] However their ideas were more advanced than their technological expertise, and within a year another patent was issued, also for twenty-one years, but for glassmaking only. The patentees included Thomas Percival, credited with the invention of the new technology, courtiers Sir Edward Zouch and Bevis Thelwell, and the King's Glazier Thomas Mefflyn.[20]

The patent was vigourously opposed, both by the owners of woodland, and the independent glassmakers. However, since the patentees were requesting not a monopoly, but sole rights to the process, and wood-burning furnaces were expected to continue in operation, the opposition was defeated. Experiments with coal were soon successful. Simon Sturtevant, who also obtained a short-lived patent for coal-fired furnaces in February 1611, wrote in 1612: 'very lately by a wind-furnace, greene glass for windows, is made as well by pit-coale at Winchester House in Southwarke as is done in other places with much waste and consuming of infinite stores of billetts

and other wood-fuell.'[21] This was over a year after the grant of the first patent to make glass in Scotland.

After considerable litigation and dispute before the privy council, a new twenty-one year patent was granted to Zouch's company on 4 March 1614, extending their rights to cover every type of glass. All other glass patents were revoked, and the use of wood-burning furnaces was forbidden, in addition to which the importation of foreign glass was prohibited.[22] Thus, for the first time, an all-embracing glass monopoly was established. It was further strengthened by a third patent granted on 19 January 1615, on the same terms but including five new patentees, one of whom was Sir Robert Mansell. During 1615 Mansell bought out all eight of his partners and embarked on the long and contentious road to complete domination of the English glass industry. Also in 1615, on 23 May, a royal proclamation was issued forbidding anyone in England and Wales to 'melt, make, or cause to be melted or made, any kind, forme or fashion of Glass or Glasses whatsoever, with Timber, or wood, or any Fewell made of Timber or wood.'[23]

Mansell concentrated most of his limited resources on the production of window-glass, which was made in separate furnaces from vessel-glass,[24] but there was a heavy demand for both products and during the years 1615-25 he encountered numerous difficulties in maintaining control over supplies. He had firstly to set up sufficient glassworks, which he did largely by sub-leasing to established glassmakers.[25] He also had to prevent the importation of glass, except under licence. Most of the glasshouse owners, more or less willingly, co-operated with Mansell, but others, notably Sir William Clavell of Kimmeridge, Dorset, and Isaac Bungar, who has already been mentioned, caused him great difficulties, culminating in three different disputes heard before the privy council in 1619, one of which involved Scotland.

Despite the Union of the Crowns in 1603, Scotland was (of course), a separate state with, from 1610, its own monopoly of glass production in the hands of Sir George Hay. Since there appears to be no evidence to the contrary, it is probably safe to assume that Hay's earliest glassworks was sustained by the Scottish market. It is unlikely that output was large, and there was considerable demand for window-glass for important buildings. However, once the number of glassworks began to expand, a larger market was required to absorb their output, as a much quoted petition to James VI from the Scottish privy council makes explicit. Dated at Holyroodhouse, 22 July 1619, the petition, made at the behest of Sir George Hay, stated that 'he has now

found be prooffe and experience, that all the countrie's dispatche of his glasse in ane haill yeir will not upholde the glasse workis the space of ane month'.[26]

Hay's petition asked that importation of Scottish glass into England should not be prohibited in the same way as all other foreign glass under Mansell's patent, but that the principle that 'the native commoditeis of aither kingdome sould be free to be sauld in the other' should apply, as was envisaged for a short period after 1603, when there had been a virtually free trade.[27] Hay pointed out that Scottish coal, exports of which had previously been forbidden, 'is daylie now transported to England for making of glasse ... without the quhilck no glasse can be maid thair' and suggested that either importation of Scottish glass should also be permitted, or the coal imports should be stopped. The threat to Mansell was quite specific, since, as Hay implied, his glass production would be stopped if Scottish coal was unobtainable, as no other coal was considered, at that time, to be suitable to make crystal.[28]

The events leading up to this petition and its outcome will be discussed later in this chapter, but the wider significance of the possible importation of Scottish glass is relevant to the expansion of the industry in Scotland. Sir George Hay, the patentee, was co-undertaker of a Scottish glassworks with James Ord, who, after some difficulties, had obtained backing from England.[29] If Hay and Ord could obtain permission to import glass into England, Mansell's monopoly could be threatened by the products of the Scottish glasshouses. Ord's English backers were the main opponents to Mansell's monopoly: Sir William Clavell and Isaac Bungar, together with John Worrell, a drinking glass maker who had trained under Robson,[30] and Dines a glazier.[31]

It seems highly doubtful that English glassmakers would have had any interest in Scottish enterprises *per se* - there is no logicial reason for them to have concerned themselves with, or invested in, such a distant area with only a small local market - but as a means of undermining Mansell, they were obviously a more attractive proposition. As subsequent events proved, the Scottish glasshouses became a source of constant anxiety to Mansell, both through their exports and by enticing away the Italian glassmakers in his workforce.

There is no evidence that glass was produced in Scotland before 1610, and there appear to be no field or place names which might act as an indicator of earlier glass making.[32] In England many early sites have been traced through such names, when all

Sir George Hay, first Earl of Kinnoull

other signs have disappeared.[33] Lythe claims that there 'are slender references to the production of fairly sophisticated glassware at Falkland as early as 1506-7',[34] but his source, in the *Accounts of the Lord High Treasurer*, is only one of many references to glass purchased for repairs to Falkland Palace and other royal buildings, and cannot be taken as evidence of local manufacture.

Despite numerous references to the substantial use of window glass in important, especially royal, buildings[35] the source of the glass usually remains unspecified and it was almost certainly imported. 'The Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D.1612'[36] lists no less than five foreign sources of window glass: Burgundy, white and coloured; Normandy, white and coloured; 'Renish'; 'Danskene' (Danzig) and English.

The entrepreneur credited with the introduction of the first industrially produced glass in Scotland is Sir George Hay of Netherliff (1572-1634). Hay was granted a 'Commission and licence [to] mak yrne and glass' within the kingdom of Scotland for thirty-one years, at Whitehall on 24th December 1610.[37] The original document has

not been found, but it was confirmed by an Act of Parliament in Scotland in October 1612.[38] An indenture dated 18 June 1627, which will be discussed on page 101, provides one significant detail from the lost patent; stating that Hay's glass could be made using either 'wood or coles'.[39] However, the first documentary evidence that Hay was actually producing glass does not occur until 1617, leading Godfrey to suggest that 'Hay had no particular plans for exploiting his patent'.[40] Such vagueness of purpose, however, does not accord with Hay's very purposeful career.

George Hay was the second son of Sir Peter Hay of Megginch. He attended the Catholic Scots College at Pont-à-Mousson, France, from where he returned to England in about 1596.[41] He was introduced at court by his cousin Sir James Hay of Kingask, later first Earl of Carlisle, and 'by a long way the most influential Scotsman at the Court of James I',[42] where he was appointed one of the gentlemen of the bedchamber. By 1610, he had been granted charters for the ecclesiastical lands of Erroll; the lands of Netherliff from the forfeited estates of the Earl of Gowrie; and, with Lord Balmerino and Sir James Spens of Wormistoun, the forfeited lands and barony of Glenelg and others on Lewis, the Castle of Stornaway and some areas of Skye.[43] He continued to amass land throughout his career, his considerable holdings in Perth being erected into the barony of Kinfauns in 1620. In 1625 the tacks of the earldom of Orkney and Shetland were transferred to him and in 1632 he was granted the Earl of Gowrie's house in Perth.[44] By the time of his death, he owned land from Orkney and Shetland to East Lothian. The Register of Sasines lists twenty-seven transactions to the benefit of George Hay between 1618 and 1630.[45]

Hay's corresponding political career was no less impressive. In 1605 he became one of the 'Fife Adventurers' appointed to settle Lewis and establish plantations there, although this venture was to prove unsuccessful. On 28 May 1616, he was admitted a member of the privy council, and was appointed Lord Clerk Register of Scotland, and later that year was made one of the commissioners for the king's rents. By 1619 he was a member of the prince's council and was appointed a member of the special cabinet within it, and in July 1622 he succeeded the Earl of Dunfermline as Lord High Chancellor and Keeper of the Great Seal. When James VI died in 1625, Hay attended the funeral and was appointed a member of the Scottish privy council of Charles I. In 1627 he was created a peer with the title of Viscount Dupplin and Lord Hay of Kinfauns, and in 1629 he secured for himself and his son, the Master of Dupplin, the office of Collector General of Taxes. The peak of his career came a year before his

death when, on the 25 May 1633, George Hay was created Earl of Kinnoull, Viscount Dupplin, and Lord Hay of Kinfauns.

Like other men of enterprise and ambition in the early years of the seventeenth century, George Hay did not ignore the possibilities and challenges of innovatory industrial investment. Hay's application for a patent to make iron and glass followed his acquisition, confirmed in July 1610, of the lease of the woods of Letterewe on Loch Maree in Wester Ross.[46] The owner, Kenneth Mackenzie, Lord Kintail, exchanged his rights to the woods, together with a cash payment, for the Fife Adventurers' lands in Lewis.[47] Old bloomery iron furnaces are known to have been in the area and it is thought that Hay may have observed one of these in operation while en route for Lewis, the port of embarkation at that time being Poolewe.[48] (Fig.10). He appears to have wasted little time in setting up his ironworks, the first in Scotland to use the blast furnace,[49] which was certainly operational by March 1612.[50] It is possible, however, that the works were built earlier than this, since the appointment of the minister of Gairloch parish, Farquahar MacRae, described on page 77, was said to be in 1608.

There are three sites on, or near, Loch Maree which are possibly connected with George Hay: Red Smiddy near Poolewe, Letterewe and Fasagh, at the head of the loch. (Fig.10). Limited archeological excavations at Red Smiddy, on the east bank of the River Ewe, in 1980, revealed that it had been a blast furnace, and the presence of non-local ores.[51] The local bog ore, while suitable for bloomery furnaces, did not produce good quality iron, so, despite the distance, expense and hazards involved, Hay shipped in iron ore extracted from 'the schoir and coast syde of Fyff besyde Dysart, and utheris pairtis thairabout, far within the flood and sea mark.'[52] Clayband ore found on the Red Smiddy site was consistent with this imported material, which, in 1620, Hay was still having shipped from Saint Monans.[53] The success of Hay's enterprise is indicated by the fact that on 1 June 1621, he obtained permission to transport iron throughout the country and to sell it at any burgh, in contradiction to the law at the time.[54] On 3 February, 1617, the *Accounts of the Masters of Works* lists 'Item to Sir George Hay for 1194 stane 4 lib wecht of Scottis irone at ii merk stane', costing the considerable sum of £1,592 6s 8d.[55]

The Fasagh site was explored by chemist W. Iveson Macadam in the 1880s, when he described it as covering acres of ground and containing three furnaces.[56] Archaeologist John H. Lewis, following a brief visit in 1982, concluded that it had

Fig.10. Loch Maree, showing sites of iron furnaces. (Dixon, J.H., *Gairloch and Guide to Loch Maree* (Edinburgh, 1886), inside back cover.)

been a bloomery and that there was no evidence of a connection with the other two furnaces.[57]

Documentary and physical evidence suggest that the most likely site for George Hay's main ironworks was Letterewe, its position being described by Macadam as on the north bank of the Furnace Burn, which flows into Loch Maree about a mile south of Letterewe House.[58] (Fig.11). The secondary material is speculative, but biographical information written by the grandson of the minister of the Gairloch Parish in Hay's time, is relevant. John Macrae, who died in 1704, wrote about his grandfather Farquhar Macrae (1580-1662),

> who was pitched upon by the bishop and clergy of Ross as the properest man to be minister of Gairloch that he might serve the colony of English which Sir George Hay of Airdry ... kept at Letterewe, making iron and casting canon. Mr. Farquhar having entered there did not only please the country people but also the strangers, especially George Hay.[59]

In contrast to the documentary sources which securely place Hay's ironworks at Loch Maree, there is no concrete evidence for the site of his first venture into glassmaking. However, in view of its importance, not just as the first glasshouse in Scotland, but, more importantly, as the foundation for the subsequent development of the industry under Hay's patent, it seems reasonable to present such material as there is. The hypothosis will be put forward that Hay's first glasshouse was wood-fired and operated alongside his ironworks at Loch Maree. The evidence to date is only circumstantial, but will be explored in some detail in order to support the argument for what might appear to be an unlikely location, and will be examined in conjunction with material concerning the ironworks.

In order to set up such a large and innovative ironworks, Hay had to bring in 'ane great number of strengers weill experimentid and skillfull' in the art of 'the making and fyning of irone ... efter ane moir easie forme and maner nor heirtofoir hes bein maid'.[60] Shaw suggests that the experts employed by Hay were English, probably from the Furness district of what is now Cumbria.[61] A family with the English surname Cross, whose antecedents are said to have been ironworkers, is still resident in Kinlochewe.[62] It should, however, be born in mind that the term 'English' could apply to any non-Gaelic speaking stranger. Shaw points out that 'at the time when Sir George Hay was setting up his Loch Maree iron works, several Englishmen, skilled in

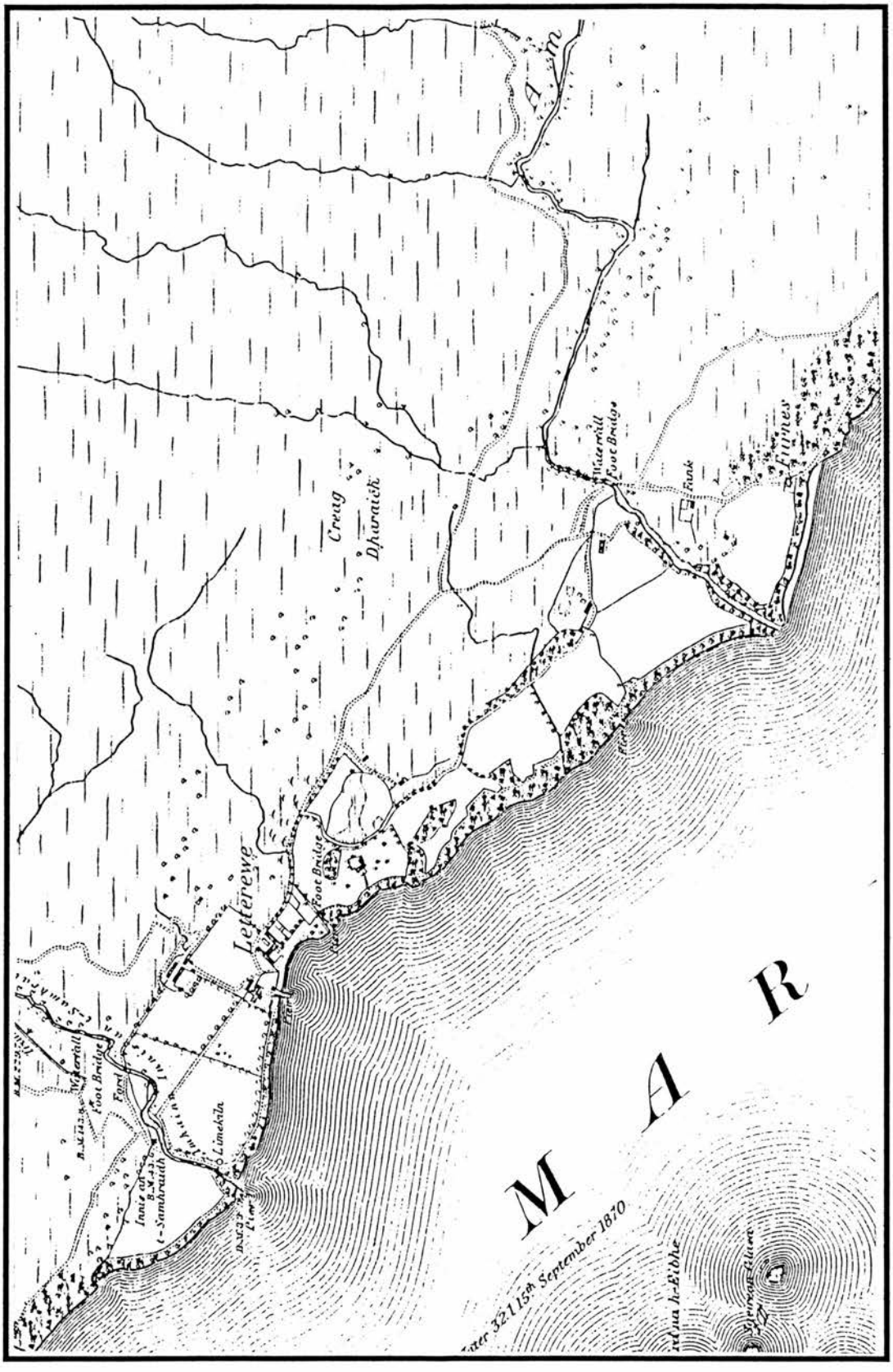


Fig.11. Map showing Letterewe and Furness. (OS. 6", Ross-shire, 1875)

ironworking, were in Scotland at the request of King James'[63] and assumes that Hay would have had easy access to them.

The problems of establishing a foreign workforce within the local community led Hay to apply to the privy council for special protective measures. He asked for, and obtained, on 11 March 1612, a commission of justiciary 'over tha haill personis interteyned be him under wages, pay, and allowance' at the works.[64] The workforce included 'a grite nomber of strangeris', as well as local workmen, employed in 'the arte and practize of making of irne, and *sindrie utheris* not heirtofoir knawne' (my italics). This gave Hay authority equivalent to the court of justiciary; enabling him to deal summarily with the workforce, to the extent of being able to impose a sentence of execution. At the same time, permission was granted by the privy council for the foreign workmen and their servants to 'beir, weir and use haglibuts and pistolats' 'because the pairts and boundis quhair thir strangers ar set awork ar in the Hielands, swa that they wilbe daylie subject to the injurie and malice of the disordinat persouns nixt adjacent to them.'[65]

It seems reasonable to assume that Hay's purpose in going to such trouble was his wish to exploit the woodland to best advantage during the term of his lease, and he was clearly prepared to invest heavily in manpower and materials in order to do so. To manufacture iron he required foreign personnel and expertise; transport to bring in good iron ore, tools and other essentials, and to ship out the finished product; and readily accessible fuel - the reason for using such a remote site. To manufacture glass he also needed foreign personnel and expertise, (although probably in smaller numbers - four or five men would have been sufficient); transport to bring in clay for crucibles, tools and other essentials, and to ship out the finished product; and readily accessible fuel - precisely the same requirements.

The technique for producing iron in a blast furnace was already well known in 1610, but in the glass industry furnace technology was a major focus of experimentation and change during the early years of the seventeenth century, encouraged by increasing concern for the destruction of woodlands and an interest in exploiting coal. The first viable English patent for making glass with sea or pit-coal was not granted until 25 March 1611,[66] *after* Hay had obtained his patent, so when he applied for it, his intention must have been to burn wood, as it specifically allowed. It has already been noted on page 71 that when the royal proclamation was issued by James VI in London, on 23 May 1615, forbidding the use of wood in glass furnaces, that

prohibition was limited to England and Wales,[67] so Hay could have continued legally to use a wood-fired furnace throughout his tenure. And he had wood available at Loch Maree.

Until 1617 there is no further mention of glass in the Scottish state papers, but on the 21 May that year Hay complained to the privy council that his glass monopoly had been breached. In his complaint he made the interesting statement that, following the grant of his licence in 1610, he had erected 'works for the making of iron', and 'hes brocht the same to some reasounable perfectioun, [so] that glass are daylie wrocht and maid thairintill'.[68] It seems reasonable to interpret what appears to be an unequivocal statement made by Hay to mean that his ironworks and glassworks were at the same place - and, since there is firm evidence that his ironworks was at Loch Maree, it would seem logical to assume that the glassworks was there too.

The type of glass made by Hay during the first few years of his patent is not specified. It seems most likely, however, that he would have made window glass, for which there was a steady, if small, market. The raw materials required to make window glass would have been available in the vicinity of Loch Maree. There is sand on the south shore of Loch Ewe, near one of the sources of bog iron ore, and there also appear to be deposits inland from the northern shore of the loch.[69] Although the available sand does contain impurities, it would have been perfectly possible to make window glass from it.[70] In his history of Pilkingtons, T.C. Barker points out that 'the early glass-makers were not very particular about the quality of their product ... They could therefore use any sand, no matter how discoloured it made the glass. Provided they could find deposits of sand in sufficient quantity, close to their source of fuel, they seem to have been quite satisfied.'[71] He went on to say that 'it paid the glassmaker to build his furnace where fuel was cheap and then to transport to it the smaller weights of sand, alkali, clay and other materials he required.'[72] Alkali, the other essential ingredient, was traditionally provided by the ash resulting from the burning of wood as fuel, but could also have been made from locally available bracken or kelp, and is not, therefore, likely to have been a problem. Clay suitable for making the crucibles was essential, but was in plentiful supply in Fife,[73] from where it could be shipped with the clayband ore for the ironworks.

Until the local industry was established, all glass had to be transported to Scotland by sea, much of the window glass coming from Danzig via the Baltic and the North Sea to Leith. Shipping out glass made at Loch Maree would have been no different, and

vessels are known to have transported iron ore from Fife to the harbour at Loch Ewe, and the finished iron to the burghs for sale. Indeed, in 1619, a petition from the Scottish privy council refers to Hay 'expecting that the despatch of the iron and glass within and without the country' would compensate for the great expense of setting up the works.[74]

Although it is currently impossible to prove that Sir George Hay's first glassworks was established at Loch Maree, there appears to be no reason why it should not have been - and several which support such a hypothosis.[75]

Hay appears to have been involved with the works at Loch Maree until the mid 1620s, although he probably moved to Edinburgh in about 1616.[76] By 1628, Colin McKenzie, son of Kenneth, created Earl of Seaforth in 1624, had resumed control of the woods there and was planning, with the help of English experts and the active support of the Crown, to cast ordnance. A legal agreement refers to rights under his former contract with 'the Right Honourable Viscount Duplin the now Lord Chancellor of Scotland',[77] who had helped to negotiate the deal.[78] Hay's nephews, John and George, sons of his younger brother Peter Hay of Rattray, afterwards Kirkland of Megginch,[79] appear to have remained at Loch Maree, supervising the works. John died before 1629 and a gravestone bearing an inscription '* *R LYIS IOHNE HAY SON * * HAY OF KIRKLAND WHO DIED AT LOCH * * * * * * * *'[80] is still visible in Gairloch churchyard.[81] His younger brother, George, is mentioned in a letter about problems at the ironworks, sent to Sir George Hay by the Earl of Seaforth, in July ?1624.[82]

The location usually given for Hay's glassworks, in both general and glass histories, is Wemyss, on the Fife coast,[83] the source often being Arnold Fleming's book *Scottish and Jacobite Glass,* published in Glasgow in 1938. Fleming's typically inaccurate statement: 'The earliest record that we have of a glasswork is in the year 1610 when Sir George Hay of Nethercliff established a glasswork in Wemyss, near Kirkcaldy, for which he obtained a monopoly for forty-one (sic) years'[84] appears to be based on two separate documents: Hay's patent of 1610, discussed above, and the report of the Scottish glass commission in 1621, discussed on page 94. The commission's report is the only contemporary document which has come to light mentioning a glassworks site, so it is not, perhaps, surprising, that the two documents were viewed in conjunction. It is certainly likely that Hay either had an interest in the glassworks at Wemyss, or that the owner was his assignee, since his patent of monopoly was extant

in 1621, and he had acted forcefully to protect it in 1617.[85] There is, however, no basis for the claim that 'Sir George Hay ... got a licence to set up a glassworks at Wemyss.'[86]

Although there is no reason to believe that Hay's own (probably wood-burning), glassworks had any connection with Wemyss, the two petitions of the Scottish privy council of 22 July and 19 October 1619,[87] referred to above, suggest that he was by then actively involved with more than one site, as well as reinforcing the earlier association between the production of iron and glass. The first petition stated that 'the clerk of youre majestie's Register', [George Hay] had brought to good perfection 'the making of irone and glasse within this kingdome, and has sett up workes in sundrie pairtis to that effect.'

Hay's precise relationship with the other owners of glassworks during his monopoly is uncertain, although there is evidence of his direct involvement with one of them, James Ord. Whatever his role, he wished to maintain his rights, and his patent was renewed by Charles I in 1634, some seven years before it was due to expire, eleven months before Hay's death, and seven years after it had been taken over by Sir Robert Mansell. Charles wrote from Whitehall on 8 January 1634:

> Being willing to renew to ... the Erle of Kynneull the patent of Glasswork within that kingdome, conditionall that a work be sett up to that purpois within the same, and kept goeing for the publict good, ... to continew after the expiration of the former [patent] the lyk number of yeres, with speciall provision for setting up and mantaneing the said work dureing the continuance of the said patent...'[88]

George Hay appears to have been a pioneer industrialist in his own right, but the motivation for the next group of entrepreneurs who involved themselves in the incipient Scottish glass industry, is less clear cut. For some, at least, the desire of his opponents to break Sir Robert Mansell's English monopoly appears to have been a crucial factor.

Hay's appeal to the Scottish privy council in 1617 to protect his monopoly[89] was directed against William Crawford of Camlarg, who, assisted by Sir John Kennedy of [blank] and Josias Kirten, 'has brocht within this cuntrey Egmondysham and Samuell Chasse Englishmen', who without any legal warrant, had 'erectit buildit and set up works at [blank] for making of glass'. Unfortunately, it has proved impossible to

discover anything about William Crawford, Sir John Kennedy or Josias Kirten. The original manuscript of the petition[90] contains blank spaces at critical points, including the place and date of the establishment of the glassworks. Crawford and Kennedy are common Scottish names, Camlarg is a tiny hamlet in Ayrshire.

Agmondesham Pickayes was a London goldsmith whose precise role at Crawford's works is difficult to ascertain, since he was also involved in another glassmaking venture in Scotland.[91] It is possible that he acted as a recruiting agent in London, providing experienced workers for employers in Scotland, and that Samuel Chasse (Chaisse) was a glassmaker. William Crawford, Agmondesham Pickayes and Samuel Chasse were summoned to appear before the privy council in Edinburgh on 21 May 1617, to answer the charge that at their glassworks they had already made, or at least intended to make, glass 'and to out and sell the same ... to the harm hurt and prejudice' of Sir George Hay. Since they did not appear, and Hay did, the defendants were ordered to cease making and selling glass within any part of the kingdom for the duration of Hay's patent.

Crawford does not appear to have complied with the order, however, because a Venetian glassmaker, John Maria del Aqua, declared in a deposition to the English privy council on 20 January 1620, that he had worked for Mr. Crawford for six weeks, before leaving him 'for want of materials and wages'.[92] It is significant that del Aqua was a vessel-glass maker, who had been brought from Venice, via Amsterdam, to work for Sir Robert Mansell in England.[93] Thorpe describes him as belonging 'to one of the best-known dynasties at Murano'.[94] It seems likely that Crawford's original works were making window-glass, in direct competition with Sir George Hay, hence his prompt opposition. It is possible that when he employed del Aqua, Crawford was attempting to change his production to vessel-glass, which would not have threatened Hay's market at that time.

By June 1619 Crawford does appear to have abandoned the glassmaking enterprise, but not without compensation for his efforts. A patent signed at Holyroodhouse on 1 June 1619 says that the king

> understanding that William Crawfurd of Camlarg in attempting to erect and mainteine glaswarkis within this realme of Scotland hath beine at greate charges and expensis, ... and that the said William Crawfurd and William Hay, sone to William Hay of Mayne, have discovered by thair paines and trauellis ... that thair is greit quantitie of

> clay in divers pairtis of this kingdome quhilk being transportit into his Majesteis realme of England is als goode and sufficient for making of pottis for glaswarkis, tabacco pypis, etc.,

granted them the sole right to find, remove and sell the clay in England for twenty-one years. They had to ask the landowner's permission to search for, and remove, the clay and to pay the king 4s Scots for each ton transported.[95] In 1627, William Hay alone applied to Charles I for a renewal of the patent, for another period of twenty-one years, because he had experienced more difficulties and expenses in obtaining the clay than he had anticipated.[96]

Crawford's patent is not without interest. Suitable clay with which to make crucibles for the glass furnaces was both essential and scarce. Although such clay was available in Stafford, Mansell had problems with deliberate contamination, and was forced, at great expense, to send for clay from France and Germany.[97] He eventually found a vein of suitable clay in Northumberland. Crawford's knowledge of, and access to, good Scottish clay (if he had actually found some, and was not merely hoping to do so) would have been very useful to future manufacturers there.

Crawford's erstwhile partner, Agmondesham Pickayes (1588-1673), seems to have been involved with a fellow goldsmith, William Ward, in the establishment of another Scottish glassworks. Pickayes came from a well-connected Sussex family,[98] and was apprenticed first to Christopher Wace, goldsmith in Cheapside, and then to William Ward, becoming a freeman in 1613.[99] Agmondesham's father, Drew Pickayes, was one of the gentleman founders of Jamestown, Virginia, where he died in 1608, having left his family in England. Interestingly, he had previously owned and managed an iron forge on his land at Brambletye manor near East Grinstead, which was in the Weald, home of the English glass industry.[100] Agmondesham also had an interest in furnaces. The Calendar of State Papers records that on 18 September 1627, a petition was made to the king by Thomas Middleton, gentleman, and Agmondesham Pickayes, his Majesty's goldsmith, for a twenty-one year monopoly to make iron 'by using a fuel called peat'.[101] His royal appointment was that of spangle-maker for the king's liveries for footmen, guards and messengers, which he held for fifty years.[102] Pickayes inherited the lands and tenements of his maternal grandfather, William Muschamp in 1606, although he did not obtain possession of them until 1620,[103] so his situation was secure, despite the financial collapse of his father. During his long career, he was also employed as servant to Edward, Lord Dudley, and Robert, Earl of Lindsey,[104]

but there is no further evidence of involvement with glass-making. Sir Robert Mansell suffered considerably from the loss of his Italian workmen to Scotland from 1617 onwards and Agmondesham Pickayes was involved in the first of these defections.

William Ward, who was himself apprenticed to Wace in 1598,[105] was the youngest of six sons of Edward Ward, 'a gentleman of good estate' of Bexley, Norfolk,[106] and eventually took over the lease of Wace's shop, counting house, cellar and yard in Cheapside.[107] William Ward acquired considerable wealth, becoming goldsmith and jeweller to Queen Henrietta Maria, wife of Charles I, was knighted, and gained the status of 'one of the most eminent bankers in London'.[108] It is interesting to note that, after the death of Edinburgh goldsmith and jeweller George Heriot in 1625, William Ward bought a quantity of the jewels he had bequeathed for the foundation of a hospital, paying the impressive sum of £5,250 sterling.[109] Arrangements for the sale were made by John Hay (d.1654), commissioner for the burgh of Edinburgh, who, in 1623, had been appointed deputy to the Lord Clerk Register - Sir George Hay.[110]

In 1628, William Ward arranged with Edward, Lord Dudley, (to whom Agmondesham Pickayes was servant), who owed him money, for the marriage of his only son, Humble, to Dudley's orphaned grand-daughter, his heiress.[111] Nothing in his highly successful history explains William Ward's interest in setting up a Scottish glasshouse, but it is quite possible that he was financing the enterprise for his un-named brother, who was in Scotland in 1617-18. He is certainly the only English person involved in the early Scottish glass industry known to have had considerable disposable capital.

In a dispute between Sir Robert Mansell and James Ord (see below), John Maria del Aqua, the Venetian glassmaker who worked for Crawford, claimed that 'Mr. Pickas' had approached him with an offer of work in Scotland. He said that he had been taken to see a Mr. Ward, who gave him money for his journey, and he had travelled to Scotland with Mr. Ward's brother, without taking leave of Sir Robert Mansell. He had then been employed by Mr. Ward for some nine or ten weeks, when 'wanting both materialls to worke and money' he left.[112] Both Pickayes and William Ward denied the charge, stating that del Aqua had made the approach himself because he was dissatisfied with his work for Mansell. In his statement, Pickayes declared that William Ward's brother was in Scotland long before del Aqua approached them and that he wrote to Mr. Ward to 'entertayne' the Venetian when he arrived there.[113] There is no further information about this enterprise. However, since del Aqua spoke

of moving from Mr Ward's employment to that of Mr Crawford, and thence to Mr Ord, it seems reasonable to assume that there were no less than three glassworks, apart from that of Sir George Hay, operating, or at least attempting to operate, in Scotland within a short period in 1617-18.

The situation is further complicated by the single mention, in 1620, of yet another glassworks about which nothing is known. On 16 November, the Scottish privy council appointed a committee consisting of 'the Lord Carnegye, the Clerk Register, the Lordis Innerteill and Curryhill, and Laird of Marchinstoun' to consult with the Master of Works, David Mitchell, burgess of Edinburgh 'and suche glassieris and otheris within the burgh of Edinburgh as they sall think meete, and to confer with Emanuell Meether anent his glasse workis'. The committee was asked to assess the quantity of glass already made, how it compared with foreign glass, how likely it was that the requirements of the country could be met and at what price, and to report back to the council.[114] Unfortunately no further mention of Meether (Mather) has been traced. It is significant that George Hay, in his role of clerk register, was on the committee and that he does not appear to have taken action against Meether. One obvious explanation is that Meether was operating under licence, or was in some other way allied to Hay.

The locations of the various glassworks belonging to Meether, Crawford, Ward and Ord are unknown, as is their eventual fate, but at least one of them must have been the works at Wemyss, examined by the commission in 1621, at which window glass was being made.[115] There is a great deal of mythology and very little evidence about the glassworks site at Wemyss, based on the one relevant place-name in Scotland, the Glass Cave.

The name of Wemyss is derived from the Gaelic word for cave, *weem*, indicating the presence of a considerable number of caves along that stretch of the Fife coast.[116] One of these, roughly half way between East and West Wemyss was described in the first *Statistical Account* as being 'about 200 ft. in length, 100 in breadth, and 30 in height'.[117] (Fig.12). A typical description of its history was printed in 1905: 'It was called the Glass Cave, because in 1610 Sir George Hay ... established a manufactory for glass in the pre-historic dwelling, and in 1698, David, third Earl of Wemyss, followed the example.'[118] *The Statistical Account* further extends the alleged period of use by saying that it 'was fitted up about 60 years ago [ie. the 1730s] by a tacksman for a glasswork; but soon after the work commenced, the man became bankrupt, and

the buildings were allowed to go to ruins.'[119] Unfortunately the cave partially collapsed in 1902 and was subsequently filled in with mine waste.

The best available description of the cave is contained in an unpublished essay by Jessie Patrick Findlay, daughter of John Patrick, a local photographer, written in 1924.[120] She visited the cave frequently as a child before the collapse, describing it as 'a lofty and open vault'. While voicing reservations about the claims made, she was convinced that glass had been made there, adding that 'many still living remember having seen a large circular aperture in the roof, designed to permit the smoke and fumes to escape'. (Fig.13).

Fraser refers to a mention of the 'Glesse Cove' in about 1648, in the Wemyss family papers,[121] but it has not, unfortunately, been possible to verify this. Although it cannot be proved that the cave was used in the early seventeenth century, a copy of a tack written in 1711 confirms that 'the great Cove situated near the Shoar in the Lordship and Barronie of Weemyss lying midleway between the touns of Easter and Wester Weemyss' contained a glass furnace at that date.[122] It is not unreasonable to assume, therefore, that this was indeed the site of the earlier furnace.

The most significant of the new Scottish glassworks appears to have been that of James Ord, who is described in contemporary documents as an undertaker with Sir George Hay,[123] and a long time dealer in glass.[124] In the letters patent setting up a commission to look into disputes between English and Scottish patentees in 1620, he is described as 'James Orde gentleman assignee of the said Sir George Haye for the glass work in Scotland'.[125] He appears, therefore, to have been in partnership with Hay in setting up a new Scottish glassworks, thus broadening the scope of Hay's involvement to include vessel-glass, as well as being an assignee for Hay's monopoly rights, which included all types of glass.

A little information about Ord's glassworks is given in the depositions by Ord himself, and by John Maria del Aqua, before the English privy council on 20 January 1620.[126] The two men's versions of events in Scotland are contradictory in some areas, but both agree that del Aqua was under written contract to work for Ord. According to the Italian, he was about to leave Scotland after quitting Crawford, when he met a Mr ?Hislop, who asked him to work for himself and his partner Mr Ord, which he agreed

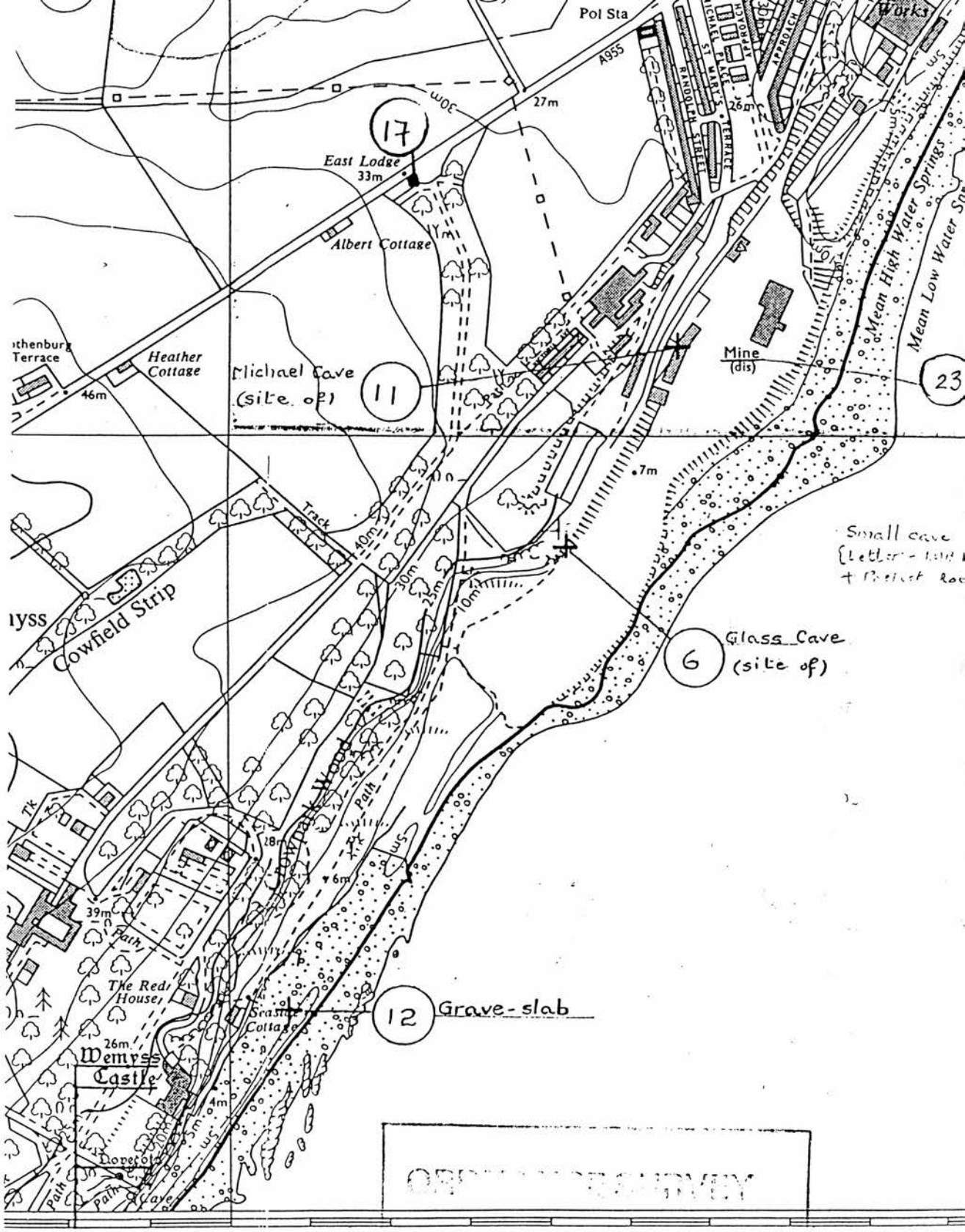


Fig.12. OS map of East Wemyss, showing site of Glass Cave. (Courtesy RCAHMS, Crown Copyright.)

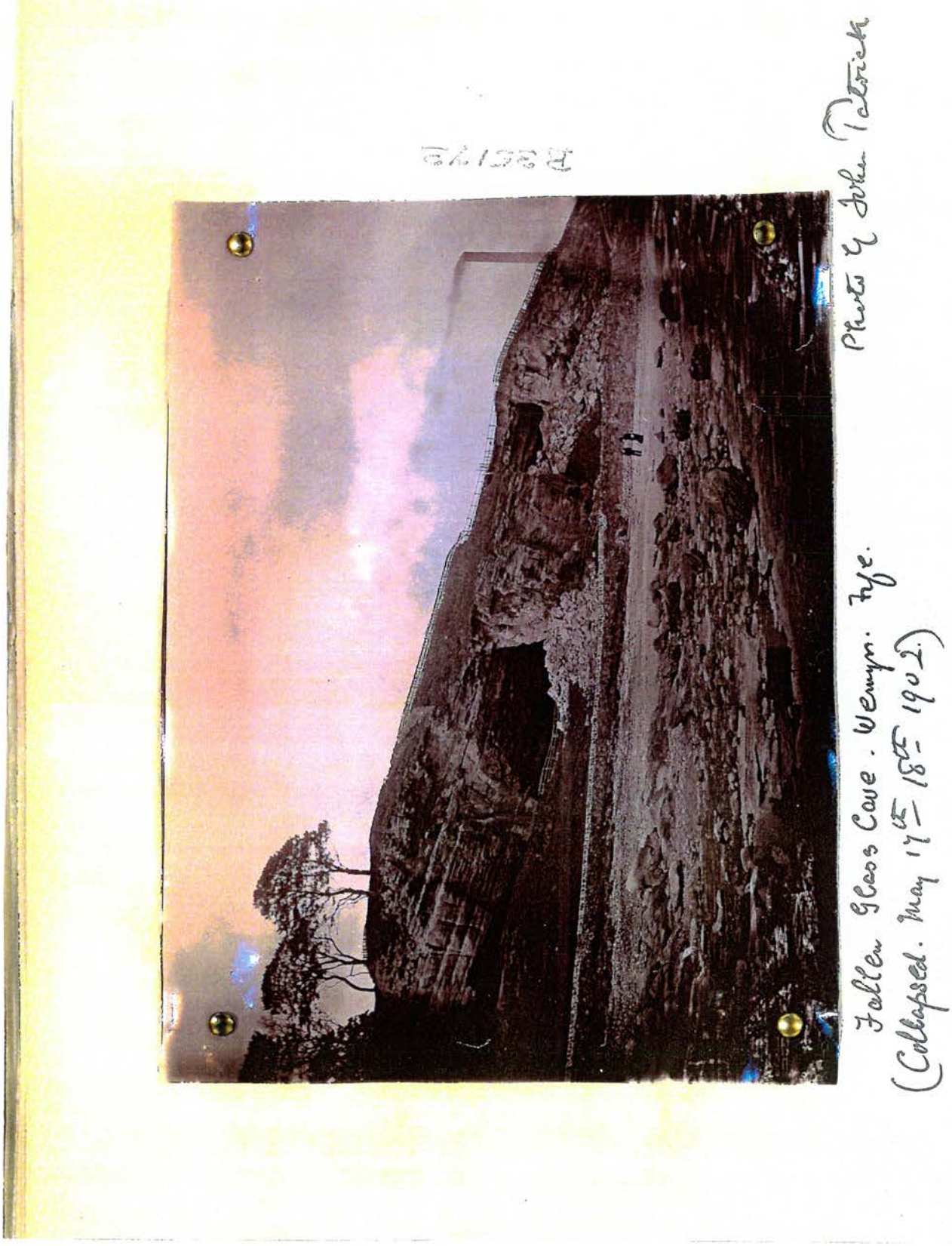


Fig.13. Photograph of the partially collapsed Glass Cave, Wemyss, by John Patrick. Courtesy RCAHMS)

to do. After its expiry, del Aqua stated that 'he addressed himself to the Lord Chancellor of Scotland and Sir George Hay the better to clear himself of the performance of the said contract and to be at his own disposing', after which he signed a new one-year contract. Ord also confirms the involvement, in their legal capacities, of the lord chancellor and Sir George Hay, clerk register, but in his version the new contract contained a special condition 'being that all questions and contraversies arising amongst us should be referred to [their] judgement and determination'. It would appear that Hay's dual role as legal arbitrator and Ord's partner might have involved a conflict of interest, but his glassmaking enterprise is not mentioned. Ord laid great emphasis on his wish that del Aqua and another glassmaker should return to Scotland 'so thay may receive a tryall of the breach of the said contract whether on their pairt or myne before the said Lords, to whose censure we have both submitted ourselves'.

The major divergence between the two statements concerns money. Del Aqua alleged that after he had signed the new contract to work for Ord for a year, he 'wrought only 5 weeks at the ffurnasse, and then left for want of materialls, Coles, and wages wherewith to keepe ffyer in the ffurnasse, he maintayned the ffyer five moneths and payd the workmen their wagies'.[127] He went on to say that he had spent twenty pounds out of his own purse 'for setting up the glasshouse', and had received 'only 30 li 19s in money for which he had delivered 40 li worth of ware', as well as paying £16 for 1600 lb weight of soda. Del Aqua produced as his witnesses 'Robert Scott, a Scottishman, and Bernardo that wrought under Mr. Hoard in that glasswork'.

In his statement Ord dismissed the credibility of the witnesses, Bernard Tamerlayne because he was involved with del Aqua and therefore biased, and Scott because he knew nothing about it. It is clear from Ord's statement that del Aqua and Bernard Tamerlayne worked together, but that the former's wages were much the higher, suggesting that del Aqua was the more skilled. According to Ord, he paid del Aqua thirty four shillings sterling a week and Tamerlayne eighteen shillings sterling, very high wages at that period. However, del Aqua claimed that he had been paid thirty eight shillings a week by Sir Robert Mansell 'before his extraordinaries, which came some times to 20s and sometimes to 40s over and above his said wages'.[128] Such high wages are a clear indication of the demand for their expertise, and the desire of employers to retain such glassblowers in their service. Del Aqua ended his statement by alleging that he had been out of work for nine months, without receiving any

money, which Ord counteracted by insisting that much of the money he had paid del Aqua and Tamerlayne was in dead wages, over fourteen or fifteen months. There is no explanation, however, for the lack of production at the glassworks.

Godfrey states that Ord's cash flow problems were overcome by obtaining 'a considerable amount of new capital' from the English opponents of Sir Robert Mansell.[129] She appears to be convinced that the four men named below were partners in a Scottish glassworks,[130] but the only evidence cited for this is a petition to the king by Mansell's wife, Elizabeth, presented in 1620 or 1621, during his absence on naval service.[131] Lady Mansell claimed that:

> Sir Wm. Clavill, Worrell a broker Dines a glazier and Bunger the sonne of an alien glassemaker (whoe hath in open audience vowed to spend 1000 li to ruine your petitioner's husband) joining with the Scottish pattentee, taking the advantage of your petitioner's husband's absence, thinking your petitioner a weake woman unable to followe the business and determininge the utter ruine of your petitioner and her husband have inticed 3 of her workmen for window glasse.[132]

She goes on to allege that the group had 'dissolved one of the works att Newcastle for window glasse' in the hope of creating a shortage, so that they could import glass from Scotland; that they had falsely claimed the right to import Scottish glass, which they could sell at cheaper rates; and that they had in fact 'brought glasse out of Scotland pretending to have your majestie's warrant for bringing of itt in, whereby your petitioner and her husband is not onlie disinabled to pay your majestie's rent but utterlie ruined'. Her petition and other state papers, yet to be discussed, certainly confirm the close involvement of the English faction with Scottish glass producers, their stated aim being to destroy Mansell's monopoly. They do not, however, actually provide direct evidence of financial backing for Ord, although that does seem probable. Sir William Clavell, however, seems unlikely to have been in a position to finance work in Scotland, since 'his estate was not large, and he had lost heavily over the alum project.'[133]

Mansell's monopoly rights to exclude all imported glass had already been challenged by Robson, who had established a furnace in Ireland for the production of window glass, considerable quantities of which had been exported to England.[134] Initially Mansell did not object, but in 1616 he confiscated a consignment, was sued for its

return, and countered with a successful lawsuit in the Court of Exchequer, which upheld his rights to prevent all importation of glass into England.[135]

Godfrey writes that after the Scottish petitions in 1619: 'Without permission Crawford's factory at Wemyss began shipping to London window glass which Mansell's agents promptly confiscated',[136] but she does not present any evidence to support this assertion. However, a hearing took place before the king and the English privy council on 4 November 1619, at which arguments from both the English and Scottish glass manufacturers were presented, a brief summary of which is extant.[137] It is clear that Scottish window glass *had* been shipped to England, since the summary states that 'The Scottish patentees have made by virtue of thair patent a quantity of glasse, and have sent it into England; The English patentee seise uppon the same, as not to be uttered in England, but confistable by virtue of his patent.' Failing any evidence to the contrary, it seems more likely that the glass complained of belonged to Hay and Ord.

The Scots claimed, correctly, that their patent predated the English one, but also that they were 'anterior in their making of glasse, and anterior in their rarity and perfection', both claims being highly dubious, in the light of the depositions discussed earlier. Mansell counter-claimed that 'the Scottish patentees have had their first workmen from the English workes, and therefor they of Scotland were not anteriour in their making of glasse'. The final sentence states simply that barilla was used in England, but not in Scotland, implying that no crystal was made there, although a large quantity of barilla had, in fact, been purchased for Ord's glass-house, according to del Aqua. No conclusion is recorded but, since other cases involving Mansell's patent were also matters for litigation at the time, the need for a comprehensive, enforceable, policy was evident. This was embodied in a proclamation of 25 February 1620, which banned all imports of glass unless express permission was granted by the 'Lords our Commissioners for the Glasse-workes heere, and in Scotland'.[138]

James had already appointed the commission on 10 January 1620,[139] naming as its members 'Lodovick Duke of Lennox, Lord Steward of our Household, James Lord Marquesse Hamilton, William Earl of Pembroke, Lord Chamberlaine of our Household, and Thomas Earl of Arundell'. They appear to have met previously to mediate between the English patentees and the assignee of the glass works in Scotland and to have reconciled some differences between them, their stated task being to ensure that future disputes 'may be appeased and ended in honour equity and

justice'.[140] Any two of the four commissioners could arbitrate, provided one was English, the other Scottish, and they were able to call as witnesses, under oath, the patentees, their assignees, glaziers, others 'trading and traffiquing in glass' and anyone else they thought fit. The powers granted to the commission were considerable, enabling them to punish by imprisonment, or other legal means, anyone breaching the patents or proclamations by importing foreign glass, illegally building furnaces, or buying illegally produced or imported glass.

As well as having a duty to enforce the terms of the patent, the glass commissioners could grant permission for the importation of glass, from Scotland only, if great scarcity could be proved. As a preliminary to attempting to establish such a scarcity, James Ord petitioned the king asking him to instruct the commissioners to order that sequestered glass should be 'putte in the keeping of neutrall persons til it sall be knowne whether the said Sir Robert and his partners doe sufficientlie serve your subjects with English glasse'.[141] Dines, the glazier, then petitioned that there was 'a want of glass'.[142] The commission embarked on a thorough investigation of the price, quality, and supply of window glass from Mansell's furnaces.[143] Conflicting evidence was presented by interested parties, but the commission concluded that there was, in fact, no shortage of good, reasonably priced glass and the prohibition of Scottish imports should remain.[144]

The closure of the English market focussed the attention of Scottish glassmakers on local matters. The reason for the appointment of the committee to investigate Meether's glass production in November 1620 is unclear, but it appears that the privy council of Scotland was anxious to improve the standard of glass made there, so that foreign imports could be prohibited, to the benefit of the national economy. (See below). Meanwhile Ord was still actively campaigning on behalf of his enterprise. A letter to the council from James VI, dated 1 January 1621, refers to a letter addressed to the council by Ord about the glassworks, 'whereby we perceave care in that perticular as importing a generall benefite, besydes a credite to that whole kingdome'. James goes on 'For our pairte, we sall give such order in that mater concerning the glassworkis as sall schortlie procure a free commerce', an interesting statement of his intentions. He also refers for their consideration an application by Ord 'for the sole burning and prepareing of kelp in that ouer kingdome'.[145]

On 21 February 1621, the Scottish privy council members also appointed a glass commission comprising Lord Carnegie, *Sir George Hay*, [my italics] Sir Andrew

Hamilton of Ridhouse, Sir Archibald Napier of Merchiston and James Murray, Master of Works, with 'suche marcheantis and glassieris in Edinburgh as [thay pleis call unto] thame' to examine the quality of the Scottish glass, to decide whether it was sufficient to supply the needs of the country at 'als chaip and reasounable pryceis as the glasse is boght in Danskeene, and to sett doun the pryceis of the said glasse, with the measouris of the cradillis and caissis thairof'. The commission was charged to check that the glassworks held a year's stock, and that 'suche burrowis and portis of this kingdome quhairunto foreyne glass wer formarlie boght frome foreyne pairtis salbe abundantlie furnist with Scottis glasse and als chaip'. They were to report in writing, so that the council could decide whether it was expedient to ban foreign imports.[146]

The formal appointment of the commission may simply have been official confirmation of a pre-existing committee, but it seems more likely that the date given in the *Register of the Privy Council* is incorrect, because their report was apparently produced on 25 February 1621, in the impossibly short time of four days. The text actually says that the commission had met 'upoun the [blank] day of Marche instant', so there is certainly some confusion of dates. It is more likely to have been produced on, or just before, 20 March. (See below). The report is lengthy and important, so will be dealt with in some detail.

The commission had examined examples of 'the braid glasse maid within this kingdome at the Weymis'[147] They found that each cradle, or case, contained fifteen 'wispis' (bundles), and that each wisp held three tables of glass (the term 'table' usually indicating a sheet of crown glass). The dimensions of the sheets of glass are given. At the widest point they measured 'ane elne wanting half ane naill', narrowing to 'half ane elne wanting half a naill'.[148] The Scottish cradles contained only three quarters as much as a kist of glass from Danzig, but the commission found it 'fullie als goode as the Dantskine glasse', although they wanted it to be made thicker and tougher.

Significantly, however, the commission did not restrict its deliberations to window-glass. They also examined 'sindrie sortis of glasse, for drinking and otheris useis, of different shaipis, gritnes, and goodenes', thus confirming that Hay and his assignee(s) were also making drinking and vessel glass. The glasses produced do not appear to have been of a high standard, since the commission decreed that

> becaus thay could not certanelie afferme that thay wer als goode as the Inglishe glasse of these kyndis, their opinioun wes that some Inglis glasse, to witt, tua of everie soirt as thay ar ordinarlie sauld at

> Lundone, salbe boght thair and send home to be keept as patternis for the Scottis glasse, and for trying the sufficiencie of the same in all tyme heirefter.

The patterns were to be kept in Edinburgh Castle. The commission also considered it important that window-glass should be available in half cases, for ease of transportation.

The privy council accepted the recommendations and ordered a missive to be sent to Sir George Bruce requesting him to buy two 'of everie soirt of drinking glassis and glassis for otheris useis', to be sent to Edinburgh, together with a list of prices. The privy council then set out their aim that Scotland should be self-sufficient in glass production which 'wilbe ane occasioun of retentioun within the cuntrey of ane grite deale of money yearlie exportit for that caus'. They gave notice that foreign imports of all types of glass would be banned from the following August, the decision to be proclaimed and published wherever necessary. All imports after that date would be liable to confiscation. At the same time, they set out the conditions to be met by 'the patentees of making of glasse, thair assignayis, associatis, and otheris haveing the charge of thir glasse workis'. These were that they should always have a year's supply of glass in hand, to prevent any shortages; that the quality of the window-glass should be as high as that from Danzig, and should be sold at £12 per cradle; and that all other types of glass should be as good as that made in England, and should be sold at the same prices as in London. If the Scottish glass-makers failed to meet these conditions, they would forfeit the monopoly. If, on the other hand, they complied, the council decreed that the prohibition of imported glass would continue until the expiry of the patent in 1641, which would not then be renewed, and 'it salbe laughfull to all his Majestei's subjects to mak braid glasse and all other sortis of glasse within this kingdome at thair pleasour'. (The monopoly was, in fact maintained until at least 1678.)

So some ten years after obtaining the first patent to make glass in Scotland, Hay and his associates were considered sufficiently well established to supply the country's needs, even if the quality of their products still left something to be desired.

A proclamation was duly issued at Edinburgh on 20 March 1621, forbidding anyone, after 1 August, 'to importe, convoy, or bring, or caus to be importit and broght, within theis kingdome frome ony foreyne pairt or pairtis ony maner, kynd, or fassioun

of glasse or glassis quhatsomevir, under the pane of confiscatioun and foirfeytour of all suche glasse'. Any forfeited imports were to be equally divided between the crown and those discovering the breach of patent.[149]

The prohibition appears to have been successful. The import book for Leith for 1622 shows that of the 317 ships which docked there between 2 November 1621 and 1 November 1622, only ten carried any glass. Seven from Danzig contained a total of thirty-one kists of window-glass, while three from London brought two dozen small looking-glasses, seven dozen hour-glasses and three dozen façon-de-Venise drinking glasses.[150]

Hay does not appear to have been content with a monopoly of the Scottish market, however, and on 14 June 1621 a special licence was granted to him by James VI 'to bring into this Kingdom any glasses melted and made in Scotland, and the same to utter and sell.'[151] James appears to have ignored the decisions of the commission, and the terms of Mansell's patent, for reasons which can only be guessed at, giving Hay a considerable advantage. The licence was confirmed on 18 June in a letter from the privy council to the officers of customs, which said that Sir Robert Mansell's patent for glass 'being respited till his return from His Majestie's service', they were, meanwhile, to allow no glass to be imported, except that made in Scotland.[152] On the same day, the privy council announced that, since the king had allowed importation of Scottish glass, to the prejudice of Mansell, he 'was graciously pleased to remitt unto Sir Robert Mansell the payment of £2800 yearly, to which he was formerly bound by vertue of his patent'.[153] This would appear to be a considerable sacrifice, since the exchequer was always short of money, but there is no evidence of any reciprocal charge to Hay.

Meanwhile attempts to undermine Mansell were maintained. Isaac Bungar continued to campaign fiercely, by any means, despite a spell in the Marshalsea.[154] In a statement defending his patent in 1624, Mansell complained that, while he was overseas (1620-21):

> some of the petitioners [against the patent, Bungar being the foremost] having by practise set on foote a Patent for the making of glasse in Scotland, with liberty of importation into England, of purpose to destroy and roote out the whole manufacture in this Kingdome, did combine with the Maisters of Shipping, that usually served Sir Robert with Scotish-coale, for the making of Christall and white glasse in London, that they sodainly raised their usuall prizes from foureteene

> shillings the tonne, to twenty foure shilling the Tonne, and after so disapoynted him that no Scotch Cole could be had for money to maintaine the workes for three weekes.[155]

As well as attempting to deprive Mansell of coal, Lady Mansell complained, in February 1621, that Sir Williiam Clavell had enticed some of her husband's workmen to go to Scotland.[156] It is clear that a concerted effort was made to use the Scottish connection to damage Mansell's works while he was out of the country, a ploy which was thwarted only by the determination and skill of his wife.

Also during 1621, opposition in the House of Commons to Mansell's monopoly reached its climax, with a declaration on 16 May that it was a grievance. However, after much acrimonious debate, his patent was eventually renewed on 22 May 1623, but with the proviso that imports of foreign glass *would* in future be permitted.[157] The debate is described in detail by Godfrey,[158] the only point directly relevant to Scotland being a dispute about the relative quality of English and Scottish window-glass. A certificate signed by seventeen London glaziers, dated 4 April 1621 reads:

> whereas it is affirmed unto his Majestie by Bungar, Dynes and others that the Glasse now brought out of Scotland is better then the Glasse nowe made by Sir Robert Mansell, Upon viewe taken by us of the sayd Glasse wee finde in our Judgmentes that the Glasse is well Coloured, but soe Thin and unserviceable that wee had rather give Twenty two shillings sixe pennce for the Case of Glasse made by Sir Robert Mansell, then twenty Shillinges the Case of Glasse brought of Scotland. [159]

Perhaps the truth lay somewhere between the two.

Sir William Clavell also continued to act in opposition to Mansell's patent. In a complaint to the privy council of 13 June 1623, Mansell alleged that Clavell had 'seduced' workmen who were paid high wages and tied by covenants or bonds to work for him, to serve in Scotland in other works.[160] Clavell denied the charge and counter-claimed that Mansell had enticed away *his* workmen from Scotland. A board appointed to examine the case reported on 27 June 1623 and found in favour of Mansell, agreeing that Clavell and John Worrall 'did practise to seduce them away to the exceeding great prejudice and almost utter overthrowe of the glasseworkes of the

said Sir Robert Mansell'.[161] Both Clavell and Worrall were committed to the Marshalsea pending further consideration of the case.

A letter to George Hay, written on 11 July 1623, from Sir Robert Aytoun (1570-1638), who appears to have been acting as his intermediary in London, offers conclusive proof of Hay's association with Clavell and that he was actually negotiating with Mansell. Aytoun began by saying that he had, on receiving letters from Hay, immediately visited the Duke of Richmond, (who, as the Duke of Lennox, was a member of the English glass commission appointed in 1620). The Duke told him that 'Sir Robert Mansell was content to take your glass workes and pay you as much for them as any other would do', but the writer doubted that 'it will neither be favourable for the country nor so beneficial towards the refounding of your lordships charges as otherwise it might be'.

Aytoun went on to say that he went from the Duke of Richmond to see Sir William Clavell at the Marshalsea, where he showed him the copy of Hay's letter to the Duke, and 'he seemed to be much comforted with it'. The contents of the letter are enigmatic but are, nevertheless, important, in that they indicate considerable covert manoeuvering in London by Hay, who was at that time Lord Chancellor of Scotland. It seems that Clavell was relieved to be told that

> my Lord Duke had told me that he was committed chiefly for going about to lay some aspersions upon yow from which he did maintaine himself to be very cleare, as having said nothing but what it seemed your lordship did take upon yow in yor owne letter, he did desire the copy of it but your lordship having commanded me to do otherwise I did retaine it by me, for any thing that I see, if our Scots councillors heer do not embrace the cause of their countrie more cheerfully then they do Sir William is like to ly long by it, and your lordship have litle right in yow

He had offered to do Clavell as much service he could 'in your lordship's cause', but requested more guidance from Hay 'before I meddle in a thing that may reflect upon your lordship'. He ended the relevant section of his letter 'When I had so performed your lordship's directions to him I went and delivered you lordship's letter to Kilmoray'. The remainder concerns court and political matters.[162]

Ludovick, Duke of Richmond and Earl of Newcastle upon Tyne (1574-1624) was a Scot, with strong local connections. He inherited the title Duke of Lennox through his father, Esme, in 1583, and was high commissioner to the Scottish parliament in 1607. His first two wives were Scottish, and, like Hay, he came from a Catholic family.[163] Sir Robert Aytoun is best known as a poet. His family came from Berwickshire and owned lands in West Fifeshire. He was born at the castle of Kinaldie, and attended St. Andrews University, before studying law in Paris. He returned to England in 1603, found favour at court, and was appointed gentleman of the bedchamber and private secretary to the queen. He was knighted in 1612, and remained in England, dying at Whitehall in 1638.[164]

Confirmation that Hay and his English backers were very successful in attracting Italian glassmakers to Scotland is contained in a letter from the Venetian ambassador in London, sent to the head of the Council of Ten on 29 April 1622. He referred to previous correspondence about attempts to persuade glassworkers from Murano to return home, particularly since virtually all imports from there had been stopped. Emphasising the urgency of the matter, he wrote:

> they have already set up new furnaces in Scotland well supplied and arranged by a certain company of merchants who have sent thither as their agent Leonardo Michellini a Venetian of low birth and a thorough rascal. The greater part of the men who worked here have betaken themselves thither, perhaps in the hope of having flints of the Ticino, as I wrote, by the ships which will go from our ports, whence other new workmen have also gone.

He went on to insist that he had done his best to persuade the men to return, adding:

> I assure your Serenity that I have even given my own money to some in order that they might return to Murano as they professed they wished to do; but afterwards learned that they had gone to Scotland and to work elsewhere, which alone would render them worthy of some punishment.[165]

Success in attracting skilled glass-makers away from Mansell to work in Scotland, together with the opening up of the English market, assisted by the close involvement of Clavell, Worral and Dines, members of the distribution network there, must have

enabled greatly increased production in Hay's glassworks, particularly in the drinking glass furnace(s).

In 1621, Godfrey shows that he exported to London 4,500 common green drinking glasses with a value of £18 15s sterling, as well as 225 cases of window glass, valued at £224 sterling.[166] (The latter was, however, only a very small proportion of Godfrey's estimated possible English production of 5,000 to 6,000 cases of window glass a year.)[167] No further importation of window glass is recorded in Godfrey's figures, although local Scottish demand would have continued. Figures for drinking glasses, however, tell a different story. In her table 'Drinking Glasses Shipped In or Out of London', Godfrey shows that in 1626, no fewer than 890 dozen crystal glasses, with a value of £267 sterling and 142,500 other glasses, valued at £593 15s, were imported from Scotland.[168] This hugely increased figure confirms Mansell's statement of 28 January 1635, that, following the renewal of his patent in 1623, and before it bore fruit, 'his workemen and servants were drawne from him and went into Scotland, and most of the glasse here vented [was] imported from thence for diverse yeares'.[169] There is no doubt that there was a very active and successful Scottish drinking glass industry in the mid-1620s, which posed a considerable threat to Mansell's patent.

There is some evidence that imports may have been greater even than the London figures demonstrate. In 1630, the Court of Session gave a ruling in the case of James Ord versus Alexander Duffs. Ord was at that point pursuing Duffs' heirs and executors 'for payment of the prices of certain glasses, viz. drinking glasses, and window glasses' which had been shipped to Hull by the late Duffs. Ord alleged that Duffs 'after selling of the saids glasses in Hull in England, intrometted with the whole prices thereof, and never made him payment'. The incident had obviously happened several years previously, because the Lords of Council and Session ruled that the case was invalid, as it should have been started within three years of the action complained of.[170] Ord's court case does, however, demonstrate that London was not the only port receiving Scottish glass, and may indicate that he was still actively involved with glass making in 1630.

In 1627, having failed to take over Hay's glassworks in 1623, Mansell was forced to protect his monopoly and 'to settle the Manufacture [in England]' by buying the Scottish patent.[171] On 9 February 1627, Hay signed an indenture transferring his rights to Thomas Robinson, a glass seller in London. On 18 June that year Robinson

in his turn, sold the rights to the Scottish patent to Sir Robert Mansell for an annual payment of £250 sterling.[172] One of the terms of the indenture was that:

> Sir Robert Mansell ... shall and will from time to time and at all convenient times during the said tearme worke or cause to be wrought for such good and well conditioned glasse of all such usuall sorts as are now made there as shall be sufficient and necessarie for the use and service of the said kingdom of Scotland and shall sell and utter the same at and for such reasonable rates and prices as the glasse shalbe sold for in England.

Mansell went on to agree that no sort of green glass would be made in Scotland, since he had already granted to Robinson and John Dalby of London the rights to make such glass for seven years. Mansell was to abide by the terms of Hay's patent, and to pay Robinson £125 twice a year in the form of white glass, as required, and at the same cost as other glass-sellers paid. Any balance either way was to be paid in cash.[173] The indenture confirms that any green glass furnace in Scotland would have been closed down, but implies that Mansell intended to continue the production of white glass there. Instead, he appears to have closed down all the Scottish glasshouses.[174] Robinson paid Sir George Hay £200 sterling a year for his patent rights.[175]

The Italians returned to his works in England, but Mansell claimed later that: 'After his men returned out of Scotland they made such ill condiconed glasse as at one tyme he lost £2000 thereby', forcing him to 'procure a whole new company from Mantua in Italie'.[176] Although their departure confirms the closure of the Scottish glass furnace, it was only a temporary cessation of activities, as will be shown later.

There is no doubt that Sir George Hay founded the Scottish glass industry, but it is more difficult to be certain of the true nature of his subsequent involvement. Evidence is fragmentary, the Kinnoull family papers were burnt with Dupplin Castle in 1827[177] and, naturally enough, most of the material in other archives deals with his legal and political roles. Nevertheless, there are sufficient indicators from which to deduce that he was very much involved in the industry from the date of his first patent in 1610, up to the time of his death in 1634.

The fact that Hay took decisive action to close down a rival window glass furnace in 1617, but that he appears to have condoned at least one other, that of Meether,

implies some positive relationship with that glassworks. He was involved as joint undertaker with James Ord, who appears to have produced both vessel glass and window glass as his assignee. He was a member of both the committee set up to examine Meether's glass, and the commission established to examine the glass made at Wemyss, which raises the question of whether he was scrutinising glass made by other assignees under his patent. There is also the possibility that he took over William Crawford's works and bought him off by arranging the clay monopoly.

Hay's London intermediary, Sir Robert Aytoun, visited Sir William Clavell in prison in 1623, so there was certainly a link between Hay and the English opponents to Mansell's monopoly. He was also in close contact with one of the London glass commissioners, the Duke of Richmond. He may well have wished to avoid overt involvement with the controversy over the glass patents, but have preferred to use his power and influence behind the scenes, taking advantage of his position to build up the Scottish industry, over which he had control. Certainly he and his heirs benefited considerably since, having received £200 sterling annual payment for his patent rights after 1627, by 1640 Mansell was paying the second Earl of Kinnoull £300 for the Scottish patent 'by his Majestie's order'.[178] Hay's patent, which had been renewed for a further thirty-one years in 1634,[179] was inherited and exploited by his son, the second earl[180] and was again renewed on 16 October 1661 in favour of Charles Hay, brother-german to William, the then Earl of Kinnoull, Sir George's grandson, for a further thirty-one years.[181] Subsequently transferred to other family members, the patent continued to generate income: in 1678, sixty-eight years after it was first granted, the proprietors of the glassworks at North Leith paid the then owner, Lady Mary Hay, £333 6 8 Scots 'for the Patent for makeing glass'.[182] There can be few patents of monopoly which were granted to one family for a such a lengthy period.

Further evidence that Hay was also indirectly involved in the glass industry can be found in the state papers. On 8 February 1619, Sir George Hay received the grant of the customs on smalt, etc. for thirty-one years.[183] On 16 February 1619, at the request of Sir George Hay, a patent was granted to Abraham Baker for the sole making of smalts for thirty-one years, at a rent of £20 sterling.[184] This was, in fact the renewal of a patent granted to Abraham Baker for a monopoly of the supply of smalt granted on 4 February 1609.[185] On 21 February 1626, Charles I demised to George Hay all customs payable for 'smalts, pot-ashes, and safers' imported, for a period of twenty-four years, at a rent of £240 sterling.[186] In a petition of 1635, Hay's successor, George, second Earl of Kinnoull, applied for a renewal of the grant, but it

was refused at that time.[187] However, on 2 August 1641, he received a commission renewing his former grant 'of all customs and subsidies of smalts, saffora, and potashes in England and Wales'[188] and it, too, remained in the family. On 17th July 1689, Dame Margaret Hay, administrator of the estate of the late Earl of Kinnoull, demonstrated that the king had granted to William, the late Earl, the farm of 'all customs, subsidies of poundage and other duties ... for all smalts, borillias, or saffers and pot-ashes' imported or exported for thirty-one years from Lady Day 1664.[189] As has been shown elsewhere, cobalt in the form of smalt or zaffre was used as a de-colouriser, or, of course, to make blue glass, while barilla and pot-ashes were essential ingredients in the glass batch.

It seems reasonable to conclude that Sir George Hay not only established the Scottish glass industry, but was very much involved in its expansion, maintaining actual control over it until 1627. He made a considerable contribution to early Scottish industrial enterprise, presiding over a business which, having started from nothing in 1610, was, by 1625, able to export large numbers of drinking glasses, as well as providing window glass and bottles for the local market. Aided by the self-interest, and probably money, of English glassmakers and their friends, an itinerant Italian workforce of skilled glassmakers and Sir George Hay's own privileged position under royal patronage, there is no doubt that the early Scottish glass industry flourished under the Hay patent. It was a level of success not to be enjoyed again for many years.

[1] E.S. Godfrey, *The Development of English Glassmaking 1560-1640* (Oxford, 1975).

[2] For example, W.H. Price, *The English Patents of Monopoly* (Boston 1906); E. Lipson, *The Economic History of England*, iii (London, 1931).

[3] See G.H. Kenyon, *The Glass Industry of the Weald* (Leicester, 1967).

[4] Patent Rolls, 17 Eliz., pt.13, mm. 3-4 15 Dec. 1574, printed in Hartshorne, *Antique Drinking Glasses* (reprint, New York, 1968), 393.

[5] Godfrey, *English Glassmaking*, 22.

[6] R.J. Charleston, *English Glass and the Glass used in England, c.400-1940* (London, 1984), 54.

[7] Patent Rolls, 34 Eliz., pt.15, mm.62-4, cited in Godfrey, *English Glassmaking*, 40.

[8] Godfrey, *English Glassmaking*, 43.

[9] *ibid*, 41.

[10] *ibid*, 47.

[11] *ibid*, 50-9.

[12] *ibid*, 54.

[13] Lansdowne MS. No.59, Art. 75 and 72, cited in Kenynon, *The Weald*, 143.

[14] Godfrey, *English Glassmaking*, 55.

[15] PRO SP.14/120, no.89. Glaziers' Petition, 15 April 1621, cited in Godfrey, *English Glassmaking*, 111.

[16] Godfrey, *English Glassmaking*, 56.

[17] Kenyon, *The Weald*, 133.

[18] Godfrey, *English Glassmaking*, 59.

[19] Patent Rolls, 8 Jac. I, pt. 12, m.20, cited in Godfrey *English Glassmaking*, 59.

[20] Patent Rolls, 9 Jac.I, pt. 29, M.19, 25 March 1611, cited in Godfrey, *English Glassmaking*, 6.

[21] Simon Sturtevant, *Metallica* (London, 1612), 8.

[22] Godfrey, *English Glassmaking*, 68 .

[23] State Papers, Domestic, Jas. I (Royal Proclamations, No. 42, 23rd May 1615), printed in Hartshorne, *Antique Drinking Glasses*, 413.

[24] Godfrey, *English Glassmaking*, 91.

[25] *ibid*, 91.

[26] NLS, Adv. Ms. 33.1.1 vol. 9 (13). Petition from Privy Council of Scotland to James VI, 22 July 1619.

[27] S.G.E. Lythe, and J. Butt, *An Economic History of Scotland, 1100-1939* (London, 1976), 82.

[28] Godfrey, *English Glassmaking*, 98.

[29] *ibid*, 97.

[30] *ibid*, 116.

[31] PRO, SP.16/521/206.

[32] Dr. Ian Fraser, School of Scottish Studies, pers. comm.

[33] Kenyon, *The Weald*, 20.

[34] S.G.E.Lythe, *The Economy of Scotland 1550-1625* (Edinburgh 1963), 41.

[35] *Accounts of the Masters of Works, i, 1529-1615*, ed. H.M. Paton (Edinburgh, 1957); household accounts in family papers.

[36] *Ledger of Andrew Halyburton*, ed. C. Innes (Edinburgh,1867), 288.

[37] *APS*, iv 515.

[38] *ibid*, iv, 515.

[39] NAS, GD103/2/127. Society of Antiquaries Collection.

[40] Godfrey, *English Glassmaking*, 97.

[41] *Scots Peerage* v, 220.

[42] Mr. John Ferris, editor of *History of Parliament 1604-29*, pers. comm.

[43] *Scots Peerage* v, 221.

[44] *ibid*, v, 222 .

[45] NAS, index to General Register of Sasines, Vols 1-14.

[46] J.M.Lindsay, 'The Use of Woodland in Argyllshire and Perthshire between 1650 and 1850' (Edinburgh University Ph.D. thesis, 1974), 50.

[47] J.H. Dixon, *Gairloch and Guide to Loch Maree* (Edinburgh, 1886), 77.

[48] John H. Lewis, 'The charcoal-fired blast furnaces of Scotland: a review', *PSAS* cxiv (1984), 436. Despite the very difficult terrain, the route travelled to Lewis appears to have been along the north side of Loch Maree. Haldane in *Three Centuries of Scottish Posts* describes runners carrying the mail 'along the north shore of Loch Maree to Achnasheen' in the 1820s. (A.R.B. Haldane, *Three Centuries of Scottish Posts,* (Edinburgh, 1971), 178.)

[49] John Shaw, *Water Power in Scotland 1550-1780* (Edinburgh, 1984), 87.

[50] *RPCS*, ix, 351.

[51] Lewis 'Blast Furnaces', 440-43.

[52] *RPCS*, x, 160.

[53] *RPCS*, xii, 187.

[54] *APS*, vi, 686.

[55] *Accounts of the Master of Works 1616-1649*, eds. J. Imrie and J.G.Dunbar (Edinburgh, 1982), 65.

[56] W.I.Macadam, 'Notes on the ancient iron industry of Scotland', *PSAS*, xxi (1886-7), 105.

[57] Lewis, 'Blast Furnaces', 444.

[58] Macadam, 'Ancient Iron Industry', 105.

[59] NLS, Ms.2133. Gregory's collections, 181-97.

[60] *RPC*S, xiv, 567.

[61] Shaw, *Water Power,* 88.

[62] Local resident, pers. comm. June 1996.

[63] Shaw, *Water Power,* 88.

[64] *RPC*S, ix, 351.

[65] *RPCS*, xiv, 567.

[66] Godfrey, *English Glassmaking,* 60.

[67] State Papers Domestic, Jas. I Royal Proclamations, No. 42, printed in Hartshorne, *Antique Drinking Glasses*, 413.

[68] *RPCS*, xi, 138.

[69] Personal observation, June 1996.

[70] British Geological Survey, pers. comm. 1996.

[71] T.C. Barker, *The Glassmakers Pilkington: 1826-1976* (London, 1977), 7-8.

[72] *ibid*, 1.

[73] W.M. Stephen 'Industrial Archeology of Fife 1790-1914' (University of Strathclyde Ph.D. thesis, 1975), 161

[74] NLS, Adv. Ms.33.1.1 (13).

[75] The Letterewe site was examined by archaeologists from Glasgow University (GUARD) in 1998, their primary focus being the ironworks and the collection of slag and other materials for analysis. They were aware of the possibility of a glass furnace on the site but no evidence of glass production was found. That does not, of course, preclude the possibility that a furnace existed, since it is clear from work done on English wood-burning glass furnaces, that very little physical evidence tends to remain on site, particularly in the form of glass shards, as broken glass was used as cullet, and the furnace would have been small.

It is possible that George Hay also had an interest in an 'iron mill', which was established near to Dunfermline on the Fife coast, by the early 1630s. There is documentary evidence for a considerable volume of production there in 1635-40. Indeed Sir Robert Sibbald (1641-1722), whose history of the area was first published in 1710, claims that it was built by Hay. (Sir R. Sibbald, *The History, Ancient and Modern, of the Sheriffdoms of Fife and Kinross* (Edinburgh, 1710), 299). This site would, on the face of it, seem a more likely one for a glassworks, but the dates when it was known to be functioning are too late, while Shaw considers that it was 'almost certainly a forge'. (Shaw, *Water Power,* 89). Hay specifically told the privy council that he was making glass daily at his *ironworks* by the much earlier date of 1617. This, with the other points made on pages 79-80, make the Dunfermline site unlikely.

[76] Lindsay, 'The Use of Woodland', 51. This is corroborated by papers in the NLS showing that Sir George Hay wished to take minister Farquhar Macra to Fife with him, but Kenneth McKenzie obtained the appointments of Minister of Kintail and Constable of Islandonan for Macra in 1618, so Hay had certainly left before that. (NLS, MS.2130. Law Tracts miscellaneous).

[77] NLS, CH.10779. Articles of agreement between Colin Earl of Seaforth and others, 20 June 1628. I am grateful to Dr. Fiona Watson, Stirling University, for bringing this to my attention.

[78] Letter from Earl of Seaforth to the Lord Chancellor, 4 July ?1624 in *Letters and State Papers of James VI* (Abbotsford Club, 1836), 365.

[79] *Scots Peerage,* v, 229.

[80] Dixon, *Gairloch,* 82.

[81] Personal visit, June 1996.

[82] *Letters and State Papers*, 365.

[83] S.G.E. Lythe and J. Butt, *An Economic History of Scotland, 1100-1939* (Glasgow, 1975), 44; A. Hartshorne, *Antique Drinking Glasses* (London, 1897), 193; H.W. Woodward, *The Story of Edinburgh Crystal* (Edinburgh, 1984), 1; P. Phillips *The Encyclopaedia of Glass* (London, 1987), 132.

[84] A. Fleming, *Scottish and Jacobite Glass* (Glasgow, 1938), 95.

[85] *RPC*S, xi, 138.

[86] Lythe and Butt, *Economic History,* 44.

[87] NLS, Adv. Ms 33.1.1, vol.9, f.13, (see n. 26 above); f.23, Petition of James Ord to James VI, Edinburgh, 19 Oct, 1619.

[88] *Register of Royal Letters 1615-1635*, ii, ed. C. Rogers (Grampion Club, 1885), 711.

[89] *RPC*S, xi, 138.

[90] NAS, PC.2/5 (60, 61). Privy council records. 'The Clerk of Register qua Wm Crawford of Camlarg and others'.

[91] PRO, SP.14/112/46. Statements of Ord, del Aqua, Pickayes, 20 Jan. 1620.

[92] *ibid.*

[93] *ibid.*

[94] W.A. Thorpe, *English Glass*, (London, 1949), 121.

[95] *RPCS,* xi, 584.

[96] *Register of Royal Letters 1615-1635*, ii, 166-7. Letter from Charles I to the Exchequer, 29 April 1627.

[97] *State Papers, Domestic,* Jas. I, Vol. 162, No. 63, printed in Hartshorne, *Antique Drinking Glasses,* 426-7.

[98] William Thorndale, 'Drew Pickayes (1564-1607)' *The American Genealogist*, lxx, No.3 (July 1995), 129-37. My thanks to David Beasley, librarian, Goldsmiths Hall, for drawing it to my attention.

[99] Goldsmiths Hall, Apprentice Book Vol. 1.

[100] Thorndale, 'Drew Pickayes', 131.

[101] *CSPD 1627-1628*, 347.

[102] Thorndale, 'Drew Pickayes 1564-1607' *The American Genealogist,* lxx, No. 3, (October 1995), 227.

[103] *ibid*, 227.

[104] HMC, Fifth Report, (i), 21.

[105] Goldsmiths Hall Apprentice Book Vol.1.

[106] 'The Barons of Dudley', *The Herald and Genealogist,* v, ed. J.G. Nichols (London, 1870), 208. My thanks to John D. Ward, for bringing this information to my attention.

[107] Goldsmiths Hall, Minute Book.

[108] *Herald and Genealogist*, 208.

[109] NAS, GD421/1/1/8. George Heriot Trust.

[110] *The Lords Provost of Edinburgh 1296 to 1932* (Edinburgh, 1932), 38.

[111] *Herald and Genealogist,* 208.

[112] PRO, SP.14/112/46, 20 January 1620.

[113] PRO, SP.14/112/28. Statement by Agmondesham Pickayes.

[114] *RPCS*, xii, 374.

[115] *RPCS*, xii, 439.

[116] Chambers, *The Gazetteer of Scotland* (Edinburgh, 1832), 1001.

[117] *The Statistical Account of Scotland*, x, ed. Sir John Sinclair (Edinburgh 1791-99), 805.

[118] A.S. Cunningham, *Rambles in Scoonie and Wemyss* (Leven, 1905), 198.

[119] *Statistical Account,* 805.

[120] J.P. Findlay, 'Some Vestiges of Forgotten Fife - The Caves of Wemyss', (RCAHMS, 1924) 4.

[121] Sir W. Fraser, (ed.), *The Memorials of the Family Wemyss of Wemyss* (Edinburgh, 1885), i, p. xxxviii.

[122] NAS, GD1/576/15.

[123] NLS, Adv. Ms 33.1.1 vol.9 (23).

[124] *ibid*, (13). The documents mentioned above do not refer to Ord by name, but Godfrey assumes that he was the 'gentilman bearour' of the petition, and the Smedmore manuscript discussed below appears to confirm it.

[125] Smedmore Mss. B 2/2. Appointment of Scottish glass commissioners.

[126] PRO, SP.14/112/46.

[127] sic - although these statements appear to be contradictory.

[128] Godfrey suggests that 'extraordinaries' were payments for particularly difficult commissions. (Godfrey, *English Glassmaking,* 188).

[129] *ibid*, 97.

[130] Godfrey, *English Glassmaking,* 99, 116, 117, 120.

[131] Godfrey mistakenly lists the document as a statement of the Glaziers Company (*ibid*, 97 n.7). The petition is not dated, but Mansell sailed in October 1620 and was away for almost a year. (*ibid*, 102).

[132] PRO, SP 16/521/206. 'Petition of lady Elizabeth Mannsell weife to Sir Robert

Mannsell Knight'.

[133] Mr. John Ferris, who catalogued the Smedmore manuscripts, pers. comm. 1996.

[134] Godfrey, *English Glassmaking,* 86.

[135] *ibid,* 86.

[136] *ibid,* 86.

[137] PRO, Lansdowne. MS. 162, no.97 fol.65. 'The Glasse cause, before the King and the Lordes', 4 Nov. 1619.

[138] NAS, RH14/1/7 'A Proclamation restraining the Importation of any sort of Glasse from beyond Seas'. Godfrey says that the proclamation was dated 25 January 1620. (*English Glassmaking,* 98).

[139] Smedmore Mss. B 2/2.

[140] *ibid.*

[141] PRO, SP14/113/95. The original of this petition is labelled '25 Feb 1620', however the petition itself is undated, and it is possible that the indexer confused the date of the petition with that of the proclamation above.

[142] SP.14/120 no.89, n.d., (Godfrey, *English Glassmaking,* 99).

[143] Godfrey, *English Glassmaking,* 99.

[144] *ibid,* 100.

[145] *APC,* xii, 771-2.

[146] *RPCS,* xii, 428.

[147] Although the term 'broad glass' usually refers to window-glass made by the cylinder method, it was also used, at that period, to mean window glass in general.

[148] A 'nail' = the measure of the middle finger from the knuckle to the tip. (*Scottish National Dictionary,* vi, eds. W. Grant and D.D. Murison (Edinburgh, 1965), 382).

[149] *RPCS,* xii, 451.

[150] NAS, E.71/29/7. Leith Port Book, 1622.

[151] PRO, SP.14/141/160.

[152] *CSPD 1619-1623,* 266.

[153] *APC,* July 1619-June 1621, 401.

[154] Godfrey, *English Glassmaking,* 103.

[155] State Papers, Domestic, Jas I, Vol.162, No.63, printed in Hartshorne, *Antique Drinking Glasses,* 426.

[156] *APC,* July 1619 - June 1621, 343.

[157] Godfrey, *English Glassmaking,* 119.

[158] *ibid,* 105-15.

[159] PRO, SP.14/120/108. Petition of glaziers, 4 and 5 April, 1621.

[160] *APC,* xxxix, 11-12.

[161] *ibid*, xxxix, 34.

[162] NLS, Adv. Ms.33.1.1 vol.10, no.98. Denmilne Ms. Sir Robert Aytoun in London to Sir George Hay, 11 July 1623.

[163] *Scots Peerage*, v, 356-8

[164] *DNB*, 772-5.

[165] *Calendar of State Papers Venetian 1621-1623*, 308.

[166] Godfrey, *English Glassmaking*, 220.

[167] *ibid*, 211.

[168] *ibid*, 211.

[169] State Papers, Domestic, Chas. I, Vol.282, No.99, printed in Hartshorne, *Antique Drinking Glasses*, 432.

[170] *The Decisions of the Lords of Council and Session 1621 to 1642*, A. Gibson of Durie (Edinburgh, 1690), 492 .

[171] *ibid*, 492.

[172] NAS, GD103/2/127. Society of Antiquaries collection. Indenture between James Robinson and Sir Robert Mansell, 18 June 1627. I am grateful to the staff of the NAS for bringing this to my attention.

[173] *ibid*.

[174] NAS, GD406/M1/28/17. Document setting out reasons why the second Earl of Kinnoull should set up a glassworks.

[175] *ibid*.

[176] State Papers, Domestic, Chas. I, vol. 282, No. 99, 'Costs etc. sustained by Sir R. Mansel, 28th Jan. 1634/5', printed in Hartshorne, *Antique Drinking Glasses*, 432.

[177] HMC, Fourth Report, 514.

[178] PRO, SP.16/417/141. The currency is not defined, but was presumably sterling.

[179] *RPCS*, 3rd. Ser., i, 155.

[180] NAS, GD406/M1/28/17.

[181] *RPCS*, 3rd Series, i, 155-6.

[182] NAS, RH15/102/6/3/8. Standsfield papers. Glasshouse account.

[183] *CSPD 1619-1623*, 12.

[184] *ibid*, 15.

[185]Corning Doc. 33/10. Printed letters patent. (Corning Museum of Glass)

[186] *CSPD 1635-6*, 46.

[187] *ibid*, 46.

[188] *CSPD 1625-1649*, 636.

[189] *Calendar of Treasury Papers 1557-1696*, 56.

Note: The numbering of state papers in the PRO used by Godfrey in 1975 has since been changed, when they were copied onto microfilm. Documents examined by me have been given their new number, denoted eg. /46, the rest have been left as designated in Godfrey, eg. No.46, and her page reference is given in brackets. The number given by Godfrey is handwritten on the ms.

CHAPTER 5

MORISON'S HAVEN AND WESTPANS.

The absence of locations for early Scottish glassworks has already been mentioned, Wemyss being the only site named in records before 1625. In that year, however, on 6 December, a second name appears in the *Register of the Privy Council of Scotland*, providing the first indication that a glassworks was operating on the south coast of the Firth of Forth. A Commission was issued to Sir John Hamilton of Prestoun, and Mr Alexander Morison, advocate and their bailies, to search for, apprehend and present before the Council:

> some Jesuites, seminaries and mespreistis [who] hants and frequentis about Prestoun Panis and Aichesonis Haven, alias callit the Newhaven, and in speciall to the people attending the glassworkis thair, unto whome thay oft tymes say masse and uses otheris Popishe rites condemned be the lawis of this our kingdome.[1]

The town of Prestonpans was best known for the salt pans which gave it the earlier name of Saltpriestoun. It had been erected to a burgh of barony in 1617 in favour of Sir John Hamilton of Preston, one of the recipients of the privy council commission quoted above.[2] Achesons Haven, about half a mile to the west of the town, had originally belonged to the monks of Newbattle Abbey, who obtained a charter in 1526, permitting them to construct a harbour from which to export their coal.[3] Known then as Newhaven, the harbour's name was altered as its ownership changed, becoming first Acheson's Haven, and eventually Morison's Haven. It formed part of the Prestongrange estate which passed to Mark Kerr, the commendator, when the abbey was erected into a temporal lordship in his favour in 1587.[4] In 1591 the grant was ratified and the lands were erected into the barony of Preston Grange and incorporated with the lordship of Newbattle.[5] Mark Kerr was created Earl of Lothian in 1606. He died in 1609 and the estate was sold to John Morison of Edinburgh, whose heirs remained in possession of the land until 1746.[6] Morison's Haven was the nearest port to Prestonpans and will be discussed in more detail in chapter eight.

The stretch of coast between Musselburgh and Cockenzie was well suited to industrial development, including the production of glass. Coal was abundant in the

area, and had been mined since the thirteenth century.[7] Sand was, of course, available along the shore, as was salt, of which there was an enormous quantity produced locally. Describing the Prestonpans area in 1636, Brereton wrote that 'An infinite, innumerable number of salt-works here are erected upon this shore; all make salt of sea-water.'[8] This may have been relevant to the choice of site, since salt could be used as a flux in the bottle-maker's batch.[9] J.N.L. Baker observes that, in England in the seventeenth century, all the most important glassmaking centres, with the exception of London, were situated near to salt workings.[10]

Clay suitable for the production of crucibles was also to be found in the area. Fire clay is often found in conjunction with coal, and Prestongrange was no exception.[11] Ashes had to be purchased, but could be brought in by sea and the finished products exported, either from Morison's Haven itself, or from Leith. Edinburgh, only some eight miles from Prestonpans, provided the largest home market available to the Scottish manufacturer at that time.

There is very little information about the early glassworks at Morison's Haven, but it does seem possible that this may have been the site of James Ord's vessel-making furnace, discussed earlier. We know that he employed Italian glassmakers, who would be expected to be of the Catholic faith. Although none of the documents discussed earlier give a location for Ord's glassworks, there is no reason why the works mentioned by the presbytery in 1625 should not already have been in operation at Morison's Haven for several years. Since it has been shown that large quantities of drinking glasses were being produced in Scotland after 1623, the Morison's Haven glassworks would appear to be a likely source.

Ord, as has been shown, was operating as assignee of Sir George Hay, who retained control over the Scottish patent rights until they were purchased by Sir Robert Mansell in 1627.[12] Although, at that point, Mansell agreed to close furnaces in Scotland making green glass, he retained the right to produce the better quality white glass.[13] Nevertheless, he appears to have shut down the Morison's Haven glassworks after 1627 and there seems to have been a hiatus in the production of glass in Scotland between 1627 and 1635, at which point Sir George Hay's son set out to re-activate the industry. The fate of James Ord is unknown, although he was still trying to recoup losses in 1630.[14] Despite having sold the patent rights to Robinson,[15] Sir George Hay had, in fact, renewed them shortly before he died.[16]

Following his death, George, second Earl of Kinnoull took over his father's patent and, according to a manuscript in the Hamilton archives, built a glassworks 'to the expence of 4000 att the least'.[17] The manuscript sets out the position of the second Earl of Kinnoull as well as that of Sir Robert Mansell, who opposed him on the grounds that the patent had been assigned to Robinson 'from whome he claymes for 200L pr annum and where are six yeares to come in that Pattent'. According to the Kinnoull manuscript, 'Sir Robt. Mansell hath not in Nyne yeares space done any thinge towards the Maintenance of that Manufacture [of glass] in that Kingdome, [Scotland] but on the contrarie hath utterly distroyed the Workes.' The Kinnoull case for disregarding the terms of the assignation of the patent to Mansell were that he had gone against the implicit wishes of the king when he granted the patent: that there should be a functioning glassworks in Scotland, and had, therefore, forfeited his rights. Like the Vernatti propositions discussed below, the Earl of Kinnoull made various offers to Mansell, including delivering 'all the greate drinkeing glasses which shalbe imported into England' to Mansell or his appointee at 3s 6d a dozen, 'which is 6d cheaper than he sells them to his customers. The Wine glasses att 2s 4d which hee sells att 2s 6d. & 3s pr. doz. The Morters (which are small drinkeing glasses) att 14d which hee sells here for 16d pr doz.' It is unclear how the dispute was resolved, but it has been shown in chapter four that by 1640, the second Earl of Kinnoull was receiving £300 a year from Mansell for the Scottish patent rights, despite the fact that Sir Philibert Vernatti's glassworks was still operating at Prestonpans.[18] (See below). It does not, therefore, appear to have gone in Mansell's favour.

Fortunately, there is firm evidence of both the ownership and the work force at a glassworks in Prestonpans in the mid-1630s. On 17 March 1635, a letter was written to Charles I and signed by eleven members of the privy council of Scotland, in support of 'that weill accomplished gentleman, Sir Philbert Vermitty ... who, to his great charge, hath perfytted that worke of making of glasse in this kingdome quhereby manie of your Majesteis good subjects heir ar haldin at worke to their great advantage ...'[19] The letter praised the King's fairness to the subjects of both Scotland and England, reminded him that Scottish glass could be imported legally into England and emphasised the value of encouraging 'the maisters of others arts and ingenious inventions to adventure with us'. It is likely that it was in response to a dispute between Sir Philbert Vernatti and Sir Robert Mansell, which had been heard before Charles and the privy council board in England in February 1635. The king had been sufficiently concerned with the case to ask that it should be delayed so that he could hear it himself.[20]

An undated paper in the Hamilton archives confirms that Vernatti and Mansell were in dispute. Headed 'Propositions for setling and Continuinge the Glas-workes in England and Scotland', it began:

> 'Whereas Sr. Filibert Vernatt hath to his extraordinarie great charge erected the Glas-workes in Scotland which were destroyed and totallie discontinued by Sr. Robt. Mansels meanes, contrarie to the intention of the grant thereof made to the late Lord Chancellour by King James, and to the great prejudice and discontent of that Nation.[21]

It continued by stating that, since the Scottish glasswork had been built, Sir Robert Mansell was claiming it 'disabled' him to pay his rent to the king, and he wanted it destroyed. Vernatti also claimed that, because of Mansell's import restrictions, Scotland 'is not supplyed with glass whereof there is now a general complaint amongst those that trade in that Commoditie'. He then offered to take over Mansell's English patent on the same terms and said he would 'secure to his Majtie fifteene hundred poundes per annum more then Sir Robb. Mansell now doth paye, and yet be bound to maintaine the workes in Scotland ...'. Alternatively, he offered to deliver to Mansell all the glasses he imported into England at a price ten percent cheaper than Mansell's. As a third option, Vernatti suggested Mansell should take over the Scottish glassworks, on condition he continued to operate it and retained the workforce and that he paid the same (unspecified) amount as Vernatti to the Earl of Kinnoull for the patent rights. If he also paid Vernatti £1,000 (presumably sterling) for his pains, Mansell could 'enter and enjoye the workes as they are now duringe the tearme to come in the old patente.' In his final paragraph Vernatti categorically denied employing Mansell's workmen, protesting that 'he hath not, nor will ... entertaine anie of his workemen that shal not be legallie departed from him'. Mansell's response can be imagined, but has not been found. Vernatti's glassworks did continue to operate under the Hay patent, and he obviously paid the Earl of Kinnoull for the privilege.[22] The comment about the workmen is explained by an entry in the *Register of the Privy Council of Scotland*, of the same date as the privy council letter of March 1635 above. It is a list of depositions, given under oath, by eleven Italian glass workers, before the privy council, each of them denying that they were under bond to work for Sir Robert Mansell and that they had been 'seduced' to work for Sir Philibert Vernatti and his brother Maximilian in Scotland.[23]

Some five years before the dispute being discussed, on 2 April 1630, having yet again lost his Italian workmen, Mansell had obtained warrants from the English Privy Council ordering that

> a diligent search [should be made] as well in all Ships as on Land, and to take speciall care from tyme to tyme at all the Ports and places of ymbarqueing neere unto you for the apprehending of everie of the said persons that shall attempt to escape beyond the Seas and to send them hither in safe custodie to answere theire unjust dealings herin.

The Italians were named as Jacamo Sepomana, Venzinso Casleloana, Cornelies Vesintello, Christophelo Forcio, Francisco Ballanata, John Rushawe, Francisco Ravanello, John Maria, Dominico Maria, Roco Jainon, Francisco Bynndo, John Rygo, Nicholas Rygo, and Armora Gilioll.[24] They were thought to have gone to France with Mansell's principal clerk, Vecon [?Bacon], who had set up his own glassworks, making drinking glasses in façon-de-Venise crystal.

On 28 January 1635, in a 'Statement of the costs charges difficulties and losses sustained by Sir Robert Mansell in the business of glass',[25] Mansell complained once more that 'his men are again drawn into Scotland'. This time the men were not named, but the list of Italians who swore their depositions before the Scottish Privy Council later that year contained several who were named on Mansell's list of 1630. Often the names are spelt differently, but this is hardly surprising, given the variations in the spelling in the seventeenth century, and the problems inherent in the transcription of foreign names by English and Scottish clerks.[26]

The list of Italians working for Sir Philbert Vernatti in Scotland in 1635 is given below, with the number of years they said they had worked for Mansell, and the name given in Mansell's list of 1630. All admitted they had worked previously for Mansell, some denied ever being bound to him, others swore that their bonds had expired, all insisted that they were free at the time they made the deposition.

Vernatti 1635		Mansell 1630
Giacomo Lepomanno	4 years	Jacamo Sepomana
Francisco Maxalao		
Christopher Farsy	4 years	Christophelo Forcio
Valeria Biondi		

Francisco Biondi	7 years	Francisco Bynndo
Francisco Ballanato		Francisco Ballanata
Giovanni Rigetto		John Rygo
Johne Rousi		John Rushawe
Charles Martine		
Basteanne Nicoll		
Johne McAcombla	2 years	??John Maria [del Aqua]

Maximilian Vernatti is named as having recruited some of the men listed above, and he appears to have lived with his family in the Prestonpans area, overseeing the running of the glassworks on behalf of his brother. In June 1636, a ship moored off Prestonpans was suspected of carrying the plague, and the privy council of Scotland took steps to isolate the passengers until declared free of infection. A decree issued by the Council reads in part: 'and siclyke allowes the said commissioners to bring ashore out of the ship of Preston, callit George Nicolson's ship, ane young childe of Maximilian Vernattois with the nurse of the childe and ane servant and to putt thame apart be thameselffes in some convenient place.'[27]

Further evidence that the glassworkers had their families with them comes from the parish records. As Catholics, the Italian families do not normally appear in the records of the time, but in 1636 Christopher Fiarlie (Farsy/Forcio above) 'glasmaker' appeared before the Prestonpans Kirk Session accused of having his child baptised 'by ane papishe priest contrair the laws of our Kirk'.[28] His answer bears witness to the movement between Mansell's glassworks and Scotland - the baptism was not out of any contempt for Scottish laws or religion, but he had done it twice before in England, and thought his action 'would been tolerated as well here'. He was told he 'must not look for such liberation' in Scotland, and must not only refrain from doing such a thing again, but must make amends by naming the priest who had performed the ceremony.

Farsy replied that his name 'was John Inkyt a priest who he had known in London, and who happening to come to his house shortly after his wife's delivery, was asked to baptize the bairne.' After consultation 'with Mr. Maximilian and others of his fellows', Farsy agreed to confess before the session and to pay a fine.

The small Italian community remained at the glassworks in Prestonpans for at least the next ten years. In 1645 local kirk members were again concerned about their religious practices. At a meeting on 7 May 1645, the kirk session was informed

> that there was certane strangeris in the parochine of Saltprestoun makers of glasse who hes bein resident there now of a long tyme and yet doth not conforme themselves to the order of this kirk but that they professe poprie and resorts now and then to the house of Seatoune on the Lords day to the great scandall and offence of the Gospell.

The minister, Robert Ker, was instructed to do all he could 'to reclame them from their errours by conferance and all other meanis possible'.[29] Seton House, not far from Prestonpans, was the residence of the Earl of Winton, a prominent local Catholic landowner, and constant source of concern to the kirk session.

Although the Italians would have provided glass blowers and servitors, labourers and other less skilled workers were recruited locally, as the privy council letter supporting Vernatti confirms.[30] The few parish records still extant for that period often fail to state the occupations of those recorded, but one local workman is mentioned in 1636. John Mongomerie (sic), described rather vaguely as 'ane of the Glasmakers or beidmaker or at least ane of their number [of] servantis' confessed to the Prestonpans kirk session that he was living with a local girl, Margaret Hunter, to whom he was not married. He was ordered to remove her from his house forthwith.[31] There is, however, a further entry on 31 July 1637, proclaiming the marriage between John Mongomerie glasmaker and the same girl.

It is interesting that the description of Montgomerie's occupation included 'beidmaker'. Beadmaking was a specialised trade, practised by the Venetians, but according to Godfrey, scarcely undertaken in England, partly because of the difficulty of keeping the Italian workmen, and partly because little coloured glass was made there.[32] Isaac Bungar, in a petition to the House of Commons opposing Mansell's patent in 1621, stated that bugles had never been made in England.[33] Beads were a popular luxury item, usually imported from Venice. Crystal beads, valued at £24 the thousand, and beads 'of glas and wode' at 10s the gross, are included in the 'Book of the Rates of Customs and Valuation of Merchandises in Scotland A.D 1612'.[34] It is quite possible that, if the Scottish workforce were relatively stable, some beadmaking could have provided a profitable side-line to drinking glass production. Not all beads were brightly coloured; Godfrey describes bugles as 'tube-shaped beads made of glass, usually black, used to ornament apparel'.[35] It seems reasonable to assume that the description of his trade was given by Montgomerie himself, in which case it is unlikely

that he would have invented the term 'beidmaker', even if he had wished to imply a status greater than he really had. This brief entry is, therefore, an important indicator of a previously unrecorded aspect of Scottish glass production at that time.

Although there is very little information about his glassworks, the name of Sir Philbert Vernatti appears frequently in English state papers and it has been possible to piece together something of his history and interests. Several short articles about the family are contained in issues of *Fenland Notes and Queries* published between 1904 and 1906, under the editorship of Rev. W.D. Sweeting. His interest in the Vernatti family arose because of Sir Philbert's connection with the massive drainage schemes undertaken in the first half of the seventeenth century in eastern England.

The Vernatti family was of Dutch origin. A portrait of Abraham Vernatti, Philbert's father is reproduced in *Fenland Notes and Queries*.[36] He had a daughter and four sons, two of whom were involved in the Scottish glassworks: Philbert, d.1643[37] and Maximilian. Philbert Vernatti received degrees of LL.D from the University of Leyden and, in 1613, from Oxford University.[38]

In 1626, Cornelius Vermuyden had undertaken the drainage of Hatfield Chase with the support of a group of adventurers, prominent amongst whom was Sir Philbert Vernatti, whose family name is still recalled by Vernatt's Drain, near Spalding.[39] There are numerous references both to the venture and to Vernatti himself in the English state papers from 1628, many concerned with the considerable construction problems and the ardent local opposition they encountered. Sir Philibert Vernatti was a man of substance who owned an estate in Yorkshire. However, claims for financial compensation and the huge debts incurred through the drainage schemes eventually ruined him. In 1638 he was forced to obtain royal protection from arrest at the instigation of a creditor, and in 1639 he petitioned the king that he deserved a better fate than 'utter destruction' as recompense for 'eleven years labour and 100,000 li cost bestowed with reasonable good success upon the recovering of so much waste and lost land as in time will be worth to King and countree a million of pounds p. ann. for ever.' He had not received the expected return on his investment from the king, estimated by Sweeting as 6,000 acres of reclaimed land.[40] Vernatti died in about 1643, leaving no will. Administration of his affairs was granted first to Thomas Jenyns, his main creditor, and then to a John Gibbon.[41] There is evidence that the glassworks at Morison's Haven ceased production after his death. An entry in the Prestonpans kirk session accounts for November 1646, records a grant of £5.10.0 to

'Janet Irvine wha bare ane bairn to ane of the glasmakers and having nothing wherewith to transport herself with the child to England.'[42]

Vernatti was, like Sir George Hay, interested in the exploitation of new technology in various fields, including an intriguing patent for making saltpetre 'out of the city excrements',[43] and a new method of drying malt for brewing.[44] In 1634 Archibald, Earl of Argyll, lent him £100 sterling 'to secure a charter for the incorporation of Maltsters and Brewers.[45] Also like George Hay, he was interested in iron smelting and obtained a patent in 1636 for making iron with sea coal, pit coal, peat or charcoal.[46] He apparently set up furnaces in the Forest of Dean, but does not appear to have been successful.[47] What prompted Vernatti to become proprietor of a glassworks in Scotland remains a mystery, although, judging by references in the English state papers to his other ventures, it may have been one of his more successful enterprises. There is, however, some evidence of a social link between Vernatti and Mansell, through the Knyvett family.[48]

Although any direct evidence of the type of glass which would have been produced at Morison's Haven is lacking, it is possible to draw some conclusions based, not only on fragments of known contemporary examples from England and northern Europe, but also upon some remarkable written material in the archives of a leading Scottish family. This consists of extracts from the diaries of Sir James Hope of Craighall (1614-61), published by the Scottish History Society in 1919.[49] Sir James was an eminent lawyer and knowledgeable metallurgist, being appointed Master of the Mint in 1641. He married in 1638, Anna, daughter and heiress of Robert Foulis of Leadhills, a wealthy Edinburgh goldsmith, through whom he inherited the Leadhills estate, where he was closely involved in the working of the mines.[50] His diary entry for 2 August 1647, describes a meeting which he attended with Sir Alexander Hamilton (d.1649), General of the Artillery, Sir James Balfour of Denmylne, baronet, Lord Lyon King of Arms (1600-1657), 'Johne Mille', 'Mr. Maissone' and an Italian glassmaker, Christopher Visitella (also referred to as Cornelius Vizitelli).[51] It is significant that a Cornelies Vesintello was listed among the glassmakers who absconded from Sir Robert Mansell in 1630 (see list above). He is almost certainly the same man and appears to have lived most of his life in Britain. Listed among the aliens living in St. Annes in the Blackfriars, London, in 1599, are 'John Visitell and Magdalen his weiff, Cornelius and John his sonnes'.[52] His father's occupation is not mentioned, but there was a major glassworks at Blackfriars. An artist with the same family name, Isaac Visitella, was resident in Edinburgh in the mid-seventeenth

century.[53] He died in 1657 and was described in his testament as a painter, an indweller in the Canongate, among whose goods were fourteen portraits, including two of the Earl of Winton, the landowner at whose house the Catholic glassmakers worshipped.[54]

The reason for the meeting in August 1647 was described by Sir James Hope as 'anent ye setting up againe by us foure of the Glasse workes at the pannes.' Prestonpans was sometimes referred to simply as 'the pannes', although there were other salt pans along the same stretch of coast, notably at Westpans, which was very near to Morison's Haven, although in the next parish of Inveresk. (Fig.14). Sir James Hope specifically wrote 'againe', and although it is probable that they held their meeting after the closure of the Vernatti glassworks, following Sir Philbert Vernatti's death, it is more likely that he was referring to another short-lived works set up by John Jossie, a merchant at Westpans, and specifically mentioned in the diary entry.

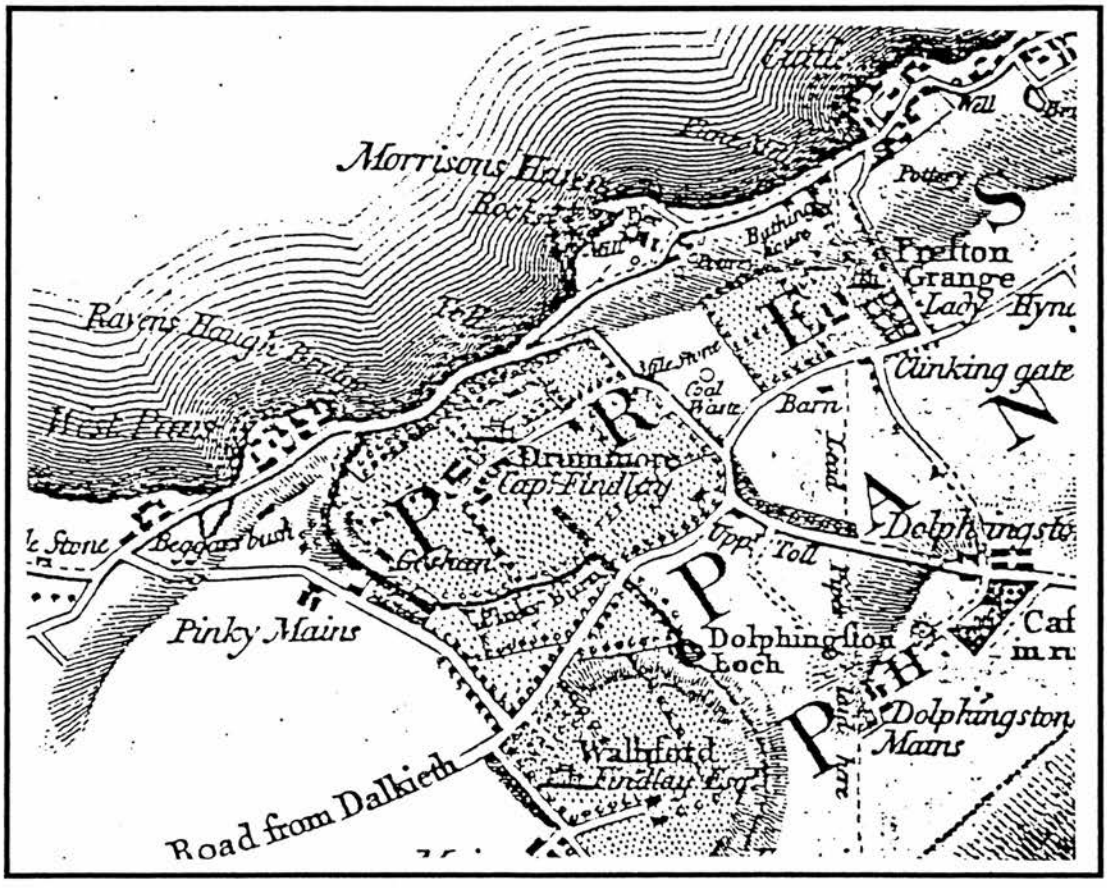


Fig. 14. Westpans. Detail from map of Haddingtonshire, William Forrest, 1799. (Courtesy NLS).

Visitella was clearly anticipating having to build new furnaces, but this is not surprising, since furnaces were expected to last only a short time, because of the extreme heat to which they were exposed.[55] Sir James Hope set out in some detail the costings given by Cornelius Visitella 'for erecting and entertaineing of a worke for tuo workemen and tuo serviteurs'.[56] The diary contains a valuable insight into the operational requirements and products of a mid-seventeenth glassworks. In view of its importance, it will be reproduced in full. (All prices are in sterling).

> The dressing of the workehouses, building of ye fornaces, ye makeing of brickes for yt effect and pottes £80 stlg. that is for the first erecting of ye worke.
>
> Foure tunne of 2000 wgt of Barilia or soda at £25 st. a tunne is £100
> sex hundreth weight of Magnes at 15/- st. pr 1[cwt] is £4.10/-
> Ane hundreth weight of saphire £2, 10/ st.
> Tuo dozen of Hollow yrons or blowers £3 st.
> For some moulds for makeing of Glasses £5 st.
> All wch will be wtin or about £200 sterling for ye first erecting of the worke.
> That ye aforesds Barilia being mixed wt about tuo part sand, they will use of yt compositione about 400 weight a weeke whereof tuo fitters wt yr tuo serviteurs wil be able to make 1800 glasses a weeke either beare or wyne or halfe of ye one and halfe of the uther. That the

weeklie charges for tuo workemen wil be	£4 10 0
There tuo servitrs	£1 10 0
The Consor	£0 15 0
The Materi	£3 0 0
Coalles 5 Cartfull	£0 10 0
Three labourers	£0 15 0
packeing and yrons mending	£0 10 0
Suma weekelie Ch	£11 0 0

The 900 wyne Glasses at 2/- p. dozen is	£7 10 0
The 900 beare at 2/6d	£9 7 6
Suma weeklie proceed	£16 17 6

> That he could be able to boylle up his mater to als great puritie as ye Venice glasses, bot that then of three hundreth of Barilia he will have bot 100 or at most 105 of yt mater for Glasses. That this Barilia is nothing els bot yt salt wch is called Soda, called barilia because it comes from such a Toune, or because it comes in barrilles. That it differs from Pott Ashes, or cineres clavellati, that it is made of a

certaine herbe, these of any wood or herbe almost; that wtout a lixive and these wt one.

That he hes seene a glasse made wch would hold 40 English Gallouns.

That window glasses and drinking glasses can not be made in one fornace because those requyre a great deall stronger heatt then these; That the fornace for those is yrfor long vauted; and for these round bot however yt he could not make window glasse, nather possiblie could find workemen who have skill of both, so wee needed not thinke of makeing both sort glasses in one fornace wch was my ouvertur to him because wee wer informed that ye greatest impediment in ye worke would be the vent of ye glasses in yt they would make more in one weeke then could possiblie be vented in a mounth, and in one yeere then in three, wch wee were informed of be Johne Joussie who wt in these few yeeres had sett up *these warkes at ye pannes,* [my italics] and as he sd for the same reasone, was forced to quitte them with 20000lb of losse. That the saphire is to give colour to the glasse lyke it selfe; and ye magnes to make ye glasse transparent and pelucide.' [57]

The amount of useful information given in this manuscript is such that separate analysis of the various subjects covered is required. Firstly, the furnace structure: Visitella begins with the assumption that clay was available with which to make both bricks and crucibles, and that the bricks would be made on site. In the eighteenth and nineteenth centuries brickworks were established at both Prestonpans and Westpans, where local clay was readily available.[58]

The specification was for a vessel-glass furnace, for which imported barilla, or soda, would be required as flux. His comment that fine crystal, like that from Venice, could be made by the use of a larger proportion of barilla in the batch is interesting and implies that he considered the sand available to be of sufficiently good quality for that purpose.[59] The large amount, six cwt, of manganese, would seem to indicate that it was to be bought in as an ore and calcined *in situ* to create the necessary fine powder, since only tiny amounts were used in each batch. Manganese was used to counteract the green tint of the glass caused by the presence of iron in the sand but if too much were used the whole batch would turn black. Interestingly, some thirty-one years later, in 1678, accounts for the Leith glassworks show that manganese was obtained from the Leadhill mines.[60] The 'saphire' referred to was cobalt ore, also calcined to

create zaffre, and used in conjunction with manganese as a decolouriser since the sixteenth century.[61] Hope neatly describes the complementary functions of the two ores.

Visitella's specification was for the mass production of beer and wine glasses, the quickest way to make which was to 'blow-mould' them. Moulds, either carved from hard wood, and kept wet to reduce burning, or of metal, were used to shape the body of the vessel, and to impart a decorative surface. The simplest type was the 'dip mould' in which the glassblower would insert the gather, inflating it until it took on the shape and pattern of the mould. It was then withdrawn and further blown until it was the required size. The cheaper wine and beer glasses of the seventeenth century were usually in the form of beakers with pushed-in feet, the beer glasses being the larger, as the price differential implies. No complete glasses known to have been made during Mansell's monopoly are extant, either English or Scottish,[62] although English archaeological excavations have provided a considerable volume of information, particularly about English green glass like that made at Kimmeridge, Dorset (1618-23),[63] and Haughton Green (1615-53).[64] Both of these glasshouses were staffed by French immigrants, so it is possible that the style of wares produced by the Italians in Scotland differed somewhat from the shards found there. Charleston illustrates a somewhat later cristallo beaker with mould-blown decoration, which may have some similarity to the Scottish wares, but in the absence of any evidence, this can be only conjecture.[65]

The selling prices suggested by Visitella appear to be very low. When Mansell was fighting to retain his monopoly in 1639, he presented a list of his charges to the House of Lords, emphasising that glasses were cheaper under his regime than they had been previously. He stated that his ordinary beer glasses 'sold formerly for 7s 4d and never under 6s per dozen are now, and have been for 15 yeers past sold by me, for 4s per dozen.' Ordinary drinking glasses for wine, formerly sold at 4s per dozen, were sold by Mansell for 2s 6d per dozen.[66] Visitella was proposing prices of 2s per dozen for wine glasses and 2s 6d a dozen for beer, which suggests that they must have been inferior in either quality or size, or that production costs were less.

The price of coal in Scotland would have been lower, since it was available at the glasshouse site from the nearby coal workings at Prestongrange, while Mansell had to transport his from Newcastle. If local sand were used, that would have cost virtually nothing. Imports of barilla from Italy or Spain would have had to be transported

further, however. Visitella's estimate of £25 a ton in 1647 can be compared to Maria del Aqua's alleged payment at Ord's Scottish furnace of approximately £20 a ton in c.1619,[67] and Sir Robert Mansell's costing of £30 a ton in 1635.[68] The fact that half the total estimated cost of setting up a furnace to make white glass was taken up by the expense of bringing in barilla is telling. Presumably the cost of transport to England would also have increased the selling price of the Scottish glasses there.

Visitelli's account is also useful in that it lists the staff required in a glassworks designed for operation by two glassblowers, each to be paid £2 5s sterling a week, a very high wage, but comparable to those paid in England.[69] Each worked with his servitor, at a wage of 15s a week, and they were supported by three labourers, no doubt recruited locally, who could earn 5s each. The conciator, or founder, without whose skill the glassworks could not function, was to be paid 15s weekly (presumably all the figures were sterling). He was responsible for the founding of the batch, a far from exact process, as Neri confirmed in 1611, saying that the quantities of ingredients 'cannot be precisely determined either by weight or measure, but must be wholly left to the eye and judgement, tryal and experience of the Conciatore.'[70] It was quite common for a glassworks to be operated by only two teams, or 'chairs', as they are often known. Godfrey writes that Robson's works at Blackfriars probably had two chairs, said to have produced about 1,500 glasses a week over seven weeks.[71] At Wollaton 1,800 green drinking glasses were produced in a week by only one chair.[72] Visitella's estimate of 1,800 glasses a week between two chairs does not, therefore, appear unreasonable.

The fire in the furnace had to be constantly maintained during production, and the normal method was to work in six hour shifts through the twenty four hours. This punishing schedule was set out by Merrett in 1662. After describing the men dressed in shirts, wearing broad-brimmed hats of straw to shield their eyes, he says:

> They work six hours at a time measured by one Glass only, and then others succeed them, and when these latter have wrought their six hours the former return to their labour, and by this means the furnaces are never idle, whilst they are in good condition, and the pots break not, and the fire keeps the Metall in fusion.[73]

It must, therefore, be assumed that Visitella envisaged the two chairs would work turn and turn about.

Most excavated furnaces appear to have been designed to hold four pots, two on each side of the fire grate. The sizes of crucibles seem to have varied widely, so it is difficult to estimate how many pots would have been required to contain the four hundredweight of metal Visitella envisaged being used in a week, although Merrett describes pots large enough to hold three or four hundredweight each.[74] Merrett also says that 'the number of the pots is always double to the working Boccas [mouths] that each Master may have one pot refined, and to work out of, and another for Metall to refine in whilst he works out the pot which hath refined in it.'[75] Visitella's costing includes provision for 'fornaces', implying that there was to be a separate furnace for preparing the frit, and perhaps for annealing, although the lehr could be in the form of a wing of the main furnace.[76]

There are two further comments which throw light on the glassworks of the period. Visitella confirms that window glass and drinking glasses were not made in the same furnace. He also states that the temperature required to melt the ingredients for green window glass was a great deal higher than that needed for drinking glasses, and that the design of the furnaces was also different, the 'long vauted' dome of the window glass furnace creating a fiercer heat than the rounded one used for drinking glass production.[77] Christopher Merrett, too, emphasises that the heat in the green-glass furnaces was extremely high.[78] Visitella also makes the point that seventeenth-century glassmakers were specialists, they either blew window glass or vessels, but not both.

A manuscript at Hopetoun House, dated 29 July 1647, four days before the meeting discussed above, contains notes which relate closely to the diary entry.[79] They appear to have been added to, in another hand, and these extra comments are also of some interest. At the end of the list of items required to set up a glassworks has been written: 'Item for homebring of one Maister & one serviteur £10 for himselfe will serve for one workman, & he hes a serviteur here alreddie.' So Visitella and his servitor were living in the area and seeking work, but it would seem that the other Italian glassmakers had left. After the list of wine and beer glasses which could be produced, the same person has written 'Mortar Glasses may be made for 22d a dozen whereof one workemen with his serviteur will make sextie dozen a weeke'. They are not mentioned in the diary entry, but were one of the products made by Mansell in England. His price was 1s 4d a dozen in 1635, considerably less than Visitella's costing.[80]

There is no information about whether a glassworks was, in fact, built as a result of this meeting, but Visitella returned to Leadhills and stayed with Sir James Hope for a further seven or eight weeks later in 1647.[81] No further mention of a glassworks has come to light in the Hopetoun papers, but there is one more intriguing reference to Visitella, headed 'Mr. Vizitellis Memorandum for sode & saline 3 Jan. 1649'. The text of the short, and incomplete, note refers to an alternative soda to barilla 'Called salline of Alexandria wich is used for making of cristall wich is salid at Amsterdam the preis is now and on for 10lb or 12lb the tonne so that if you please to by 5 or 6 hunderwayt of salline'.[82] This note does imply active involvement with glassmaking in 1649, but is not in itself sufficient to prove that the projected glassworks was built.

Sir James Hope was investigating the possibility of producing both window and vessel glass in order to ensure a viable market, because he regarded the possiblility of selling enough drinking glasses to maintain a single-product works as very doubtful. The name of his adviser on the difficulty of marketing glass is of great interest, since these few words in Sir James Hope's diary provide the only documentary evidence that has come to light so far about another east coast glassworks, that of John Jossie (Joussie, Jowsie). According to Sir James Hope, Jossie had, within the previous few years, established a glassworks in the area, had failed to find a market for his wares, and had closed it down with the loss of £20,000, which even in Scots money was a very large amount.

John Jossie of Westpans was a merchant in Edinburgh, who was created a burgess and guild brother by right of his wife, Catherine Morison, on 13 August 1634.[83] He married Catherine Morison, daughter of the late Harye Morison, merchant, burgess and guild brother, on 19 September 1633.[84] Jossie was also an overseas trader, and owned lands in Aberdeenshire. On 18 September 1644, Jossie and his eldest son Robert bought sixty-four acres of land at Prestongrange.[85] The exact location is not specified, but they were later described as the Drummore estate, which was bought by Sir Hew Dalrymple, Lord Drummore[86] (see chapter 10), and which included part of Westpans. Jossie was active in local affairs; in 1652 he was made a bailie, and he was chosen to represent the burgh of Edinburgh at the London parliament.[87] He was again elected to be a magistrate in 1655 and was First Bailie in 1655, 1657 and 1660.[88] Jossie was buried in Greyfriars churchyard on 8 July 1668. [89]

Although of a much later date, there is evidence that Cornelius Visitella did, in fact, operate at a re-established glassworks, almost certainly on John Jossie's Westpans site. On 28 October 1662, Jacob Visitella, probably Cornelius's son, described as 'glass maker at West Pans', borrowed £63 9s Scots from a wright, John Bayne, who also lived there. The bond was witnessed by Edward Dagnia, another Italian glassmaker, who will be discussed elsewhere.[90]

This bond confirms the evidence of a functioning glassworks which was provided by botanist John Ray, in his description of a journey through Scotland in 1661. On 19 August, he travelled from Dunbar to Leith, stopping for a trip out to the Bass Rock on the way. After resuming his journey he wrote:

> By the way also we saw glasses made of kelp and sand mixed together, and calcined in an oven. The crucibles which contained the melted glass, they told us were made of tobacco-pipe clay. At Leith we saw one of those citadels built by the Protector...[91]

Characteristically, Fleming could not resist embellishing this very useful quotation, most importantly with the addition of a place name. His 'quotation' provides a vivid illustration of the liberties he habitually took with primary material:

> John Ray, the English naturalist, in his *Itinerary* (page 104), states that 'while travelling along the shore at Prestonpans, I saw glass being produced there in August 1661 from a mixture of kelp, salt and local sand, all calcined and melted in ovens. The crucibles which contained the molten metal were made by the local potters of specially selected pipeclay found in the neighbourhood which has proved a most satisfactory refractory material.'[92]

Ray was an acute observer and precise recorder, so there is no doubt that he did see glassmaking somewhere along the coast between the Bass Rock and Leith. Since it is highly unlikely that there were two glass furnaces operating, and since Jacob Visitella and Edward Dagnia were at Westpans, it seems reasonable to assume that that was where he saw them working. (It should, however, be born in mind that Morison's Haven and Westpans were physically close together, although in separate parishes.) Ray describes the use of kelp, available via the local coastal trade and relatively

inexpensive, not the barilla listed in Sir James Hope's diary, implying that lower quality, and therefore cheaper, glasses were being produced at that time.

Jacob Visitella was operating under the Hay patent, which had been renewed in 1634, and which was again renewed, in favour of Charles Hay, brother german to William Earl of Kinnoull, on 16 October 1661.[93] In 1663, Jacob Visitella renounced his right to make glass under the patent, in favour of Robert Paip, who was setting up a glassworks in the citadel at Leith, as will be discussed on page 141. Visitella undertook not to work in glass, unless licensed to do so by Robert Paip, for two years, under penalty of £100 Scots.[94] Shortly afterwards Edward Dagnia (who was probably working with Visitella at Westpans[95]) contracted to make glass for Paip at the citadel,[96] so it appears that the glass furnace at Westpans finally closed in 1663. The period between the Hope diary of 1647 and the Visitella bond of 1662 is, unfortunately, a difficult one in which to find the evidence necessary to confirm the continuous operation of a glassworks at Westpans. The register of deeds is not indexed before 1661, while parish and kirk session record keeping was, not surprisingly, disrupted by political, military, and eccliastical events. The names of Visitella and Dagnia appear in abundance in English parish records, but not at all in Scotland.[97] On the other hand, the Visitellas had clearly made Scotland their home - a Jacob Visitella was still making glass in Prestonpans in 1707, as will be shown later. It seems more plausible that a small Westpans glass furnace should have continued to operate after 1647, possibly under the patronage of Sir James Hope of Craighall, who lived until 1661, than that it should have been re-opened shortly before Ray's observation of that year.

Some of the recurring problems experienced by owners of Scottish glass-houses, were over-ambitious initial projects, inadequately researched markets and the fact that the works were managed by entrepreneurs with no knowledge of glassmaking. In the case of Westpans, Cornelius Visitella, clearly an experienced and knowledgeable glassmaker who wanted to stay in Scotland, appears to have been involved from the beginning, indeed, he may well have put the idea to Sir James Hope of Craighall in the first place. If that were the case, and if he were in charge of his own furnace, with a son to train, he would certainly have had every incentive to keep working, despite any external difficulties and would presumably have been flexible enough to adjust to market fluctuations and to make do with locally available materials if necessary. Where hired workmen could and did, demand 'play' wages and leave if they were not forthcoming, the Visitellas would not have been held to that ransom. Indeed, at some

point, Jacob Visitella himself became owner of the patent rights. This appears to be the only occasion in the early Scottish glass industry on which the patentee was the actual glassmaker, a very different situation from the usual one, where the patentee had to hire a glassmaking team from elsewhere. Clearly it was also the most likely recipe for success, particularly in times of economic and social uncertainity.

The question of a market large enough to absorb production remains, however. Clearly Sir James Hope had been planning to compensate for the small Scottish market by diversifying production into window and drinking glasses, a solution which Cornelius Visitella dismissed as impossible. Since only one type of glass was practicable, and Visitella was clearly not a maker of window-glass, the most likely outcome would have been a decision to combine the production of drinking glasses with that of containers for the local apothocary trade, for which there would have been a steady demand. Archaeological investigation at the contemporary Haughton Green glasshouse site near Manchester (1615-1653)[98] shows that a wide variety of vessel glass was made at the one furnace there, including beakers, jugs, wine glasses, bottles, flasks and phials, all of which would have been well within the capability of Italian glassmakers like the Visitellas and Dagnias.

Although more evidence is needed, it does seem likely that, albeit on a much smaller scale, glass production continued on the south coast of the Forth after the death of Philibert Vernatti and the departure of most of his Italian workforce in *c.*1646. The Visitella glassworks bridges the gap between the foundation of the glass industry, under the auspices of Sir George Hay and continued under Mansell, and the establishment of glassmaking at Leith, where the second phase of the Scottish industry began - the shift towards the predominance of bottle production.

[1] *RPC*S, 2nd ser., i, 211. My thanks to George Haggarty for this reference.
[2] R. and W. Chambers, *Gazetteer of Scotland* (Edinburgh,1832), 876.
[3] *ibid*, 789.
[4] *RMS*, v, 1307.
[5] G. Murray, R. Apted and I. Hodkinson, 'Prestongrange and its Painted Ceiling', *Transactions of the East Lothian Antiquarian and Field Naturalists' Society*, x (1966), 97.
[6] *ibid*, 92.
[7] J. Hatcher, *The History of the British Coal Industry Volume 1: Before 1700*

(Oxford, 1993), 97.

[8] P.H. Brown, *Early Travellers in Scotland,* (Edinburgh, 1891),136.

[9] This was actually more likely to have been a factor in the later period.

[10] J.N.L Barker, 'England in the Seventeenth Century' in Darby, (ed.), *An Historical Geography of England Before 1800* (Cambridge, 1936), 419, (cited by Barker, *The Glassmakers*, 488 n.76).

[11] G. Dalgleish, G. Haggarty and P. McVeigh, *Pots at the 'Pans* (Scottish Mining Museum, 1990); pages are not numbered.

[12] NAS, GD103/2/127.

[13] NAS, GD103/2/127.

[14] A. Gibson of Durie, *The Decisions of the Lords of Council and Session 1621 to 1642* (Edinburgh, 1690), 492. See chapter 4.

[15] See chapter 4.

[16] *RPCS,* 3rd Ser., i, 155.

[17] NAS, GD406/M1/28/17. The currency is not defined, but appears to be sterling. The paper, which begins: 'Whereas Sir Robt Mansell claimes the Manufacture of Glasses in Scotland for a terme of 6 or 7 yeares to come ...' is not dated, but would appear to be from 1635. The terms of the two documents GD406/M1/28/17 and /18 are so similar it seems very likely that they were produced for the same hearing.

[18] The Marquis of Hamilton had been appointed to the glass commission in England in 1620, (see chapter 4), so this may account for the presence of these papers in the Hamilton archive. Much of the archive in the NAS is still being catalogued, so more information may come to light eventually.

[19] *RPCS*, 2nd series, v, 513.

[20] *CSPD 1635-1636*, 206.

[21] NAS, GD406/M1/28/18.

[22] It is impossible without further evidence to know whether there were two glassworks, since both Kinnoull and Vernatti claimed to have built one at great expense, or whether they were partners in one concern. The latter seems more likely.

[23] *RPC*S, 2nd series, v, 518.

[24] *APC 1629-1630*, 336.

[25] *CSPD 1634-1635*, 476.

[26] The name Vernatti is spelt Vernat, Vernate, Vernatty, Vernattie, Vernattois, Vermitty, Vermitti and Bernatti in various contemporary documents.

[27] *RPC*S, 2nd Ser., vi, 273.

[28] NAS, CH.2/307/28 Prestonpans parish records.

[29] *The Records of the Synod of Lothian and Tweedale 1550-96, 1640-49*, ed. J. Kirk,

(Stair Society, 1977), 175.

[30] Among the reasons cited for maintaining the glassworks was that 'manie of your Majesteis good subjects heir ar haldin at worke to their great advantage', *RPCS*, 2nd Ser., v, 513.

[31] *Synod of Lothian and Tweedale*,164.

[32] E.S. Godfrey, *The Development of English Glassmaking 1560-1640* (Oxford, 1975), 225. But Newman says that bugles were made at a Godalming 'factory' set up *c.*1587 by an Italian called Luthery. (Newman, *Dictionary of Glass,* 52).

[33] Alford papers, Harl.6847, ff.269v-270, in *Commons Debates 1621*, vii, 540-1. Coloured glass was produced at Haughton Green. (Vose, *Haughton Green*, 20).

[34] *Ledger of Andrew Halyburton*, 289.

[35] Godfrey, *English Glassmaking,* 32n.

[36] *Fenland Notes and Queries,* Jan. 1905, 133.

[37] He was alive on 7 April 1643, when a creditor Thomas Jenyns applied for his arrest, (HMC Report V (London, 1876), 72). A reference on 31 July, does not indicate that he was dead, but on 22 Nov. 1643, there is mention of deeds 'belonging to Sir Philibert Vernatti deceased' of Carleton, Co. York, Kt. (*ibid*, 114).

[38] *Complete Baronetage*, ed. G.E.C. (Exeter, 1902), 397.

[39] *Fenland Notes and Queries*, vi, 30.

[40] *Fenland Notes and Queries*, v, 346-7n.

[41] PRO, PROB.6/24, 19 left; PROB.6/25, 171 left. Probate records.

[42] CH2/307/5. Prestonpans parish records.

[43] *CSPD 1634-1635*, 29.

[44] *ibid*, 159.

[45] NAS, GD103/2/141. Society of Antiquaries collection. Agreement between Sir Philibert Vernatti and Archibald Duke of Argyll, 14 August 1634.

[46] *CSPD 1636-1637*, 300.

[47] Dud Dudley, *Mettalum Martis or Iron made with Pit-coale, Sea-coale, etc.*, (London 1665, reprinted 1854), 15. There appears to be no extant evidence of his Forest of Dean enterprise. (Dr. C.E.Hart, HM Senior Verderer, Forest of Dean, pers. comm. 1996.)

[48] In 1600, Sir Robert Mansell referred to 'my dear nephew' Thomas Knyvett, his attendant at a duel in which he was involved. (Statham, *History of the Family of Maunsell,* 356). Elizabeth, daughter of Nathaniel Bacon, Mansell's brother-in-law had married Sir Thomas Knyvett of Ashwellthorp, Norfolk (*ibid*, 357n.), who became Warden of the Mint (PRO, SP.39/20). On 24 May 1631, Nathaniel Knyvett sent a message to 'his brother Sir Philibert Vernatti' announcing the arrival of a daughter,

and asking his wife to be godmother. (*CSPD 1631*, 335). Among the portraits inherited by a descendant of Sir Philbert Vernatti, listed in *Fenland Notes and Queries*, are those of Nathaniel Knyvett, 1631 and Mary Knyvett, 1631. (*Fenland Notes and Queries,* v, 31). *Musgrave's Obituary* lists Nathaniel Knyvett, Ashwellthorpe, Norfolk, 15 Nov. 1659 and Thomas Knyvett, Lord Berners, Ashwellthorpe, Norfolk, 30 June 1658. (*Musgrave's Obituary,* vi, (London, 1901), 390).

[49] 'The Diary of Sir James Hope, 1646-1654' ed. Sir J. Balfour Paul, *SHS Miscellany,* iii, (SHS,1919).

[50] *Scots Peerage*, iv, 491-2.

[51] 'Diary of Sir James Hope', 139.

[52] R.E.G. Kirk and E.F. Kirk eds., *Returns of Aliens Dwelling in the City and Suburbs of London from the Reign of Henry VIII to that of James I*, Publications of the Huguenot Society of London, x, pt 3 (Aberdeen, 1900-08), 51.

[53] 'Diary of Sir James Hope', 112n.

[54] *Painters in Scotland 1301-1700*, (SRS, 1978), 99.

[55] Godfrey, *English Glassmaking,* 143, quoting Scoville, *Capitalism and French Glassmaking, 1640-1789,* 37.

[56] 'Diary of Sir James Hope', 140.

[57] *ibid.* Gordon Marshall in *Presbyteries and Profits*, 276-7, interprets the final paragraph as indicating that, having assessed the costings and other relevant factors, Sir James Hope 'was unimpressed' and decided that 'the venture was unlikely to be systematically profitable. Therefore, the glass manufactory was not erected.' This interpretation would seem to be open to argument a) because Hope was simply quoting Visitella's answers to his queries, and although he was clearly disappointed in some of his intentions, the diary extract did not indicate any conclusion; b) because the absence of evidence that the glasshouse was built does not preclude the possibility that it was.

[58] G. Douglas and M. Oglethorpe, *Brick, Tile and Fireclay Industries in Scotland* (RCAHMS, 1993).

[59] This could be regarded as further confirmation that the area was the site of the glassworks which produced the crystal exported to London in 1626.

[60] NAS, RH15/102/6/3/8. Standsfield papers. Accounts.

[61] Godfrey, *English Glassmaking,* 160.

[62] R.J.Charleston, *English Glass and the Glass used in England, c.400-1940* (London, 1984), 66.

[63] D. Crossley, 'Sir William Clavell's Glasshouse at Kimmeridge, Dorset: The

Excavations of 1980-81, *Archaeological Journal,* cxliv, (1987), 358-362.

[64] R.H. Vose, 'Excavations at the 17th-century glasshouse at Haughton Green, Denton, near Manchester', *PMA, xxviii* (1994), 27-33.

[65] Charleston, *English Glass*, plate 21c.

[66] BM, MS.669, f.4 (7) (in Hartshorne, *Antique Drinking Glasses* (reprint New York, 1968), 434-5). Prices in sterling.

[67] PRO, SP.14/112, no.46.

[68] Godfrey, *English Glassmaking,* 196, quoting Mansell's 'The True State of the Business of Glasse'.

[69] Godfrey, *English Glassmaking,* 188.

[70] Neri, *The Art of Glass,* (1611, trans. Merrett, 1662), 21.

[71] Godfrey, *English Glassmaking,* 222 .

[72] *ibid,* 222.

[73] Merrett, *The Art of Glass,* 249.

[74] *ibid*, 243.

[75] *ibid*, 239.

[76] R.J. Charleston 'Glass Furnaces through the Ages', *JGS,* xx (1978).

[77] The term 'long vauted' is likely to have referred to the French rectangular furnaces, used by immigrants from Lorraine and Normandy for making window glass. Italian furnaces were traditionally round, and they usually specialised in the production of drinking glasses. Although the two types of glass could not be made in the same furnace at that time, according to Visitella, 18th century papers imply more versatility in furnace design by then. (See chapter 10, p.295, flint glass and bottles made in the same furnace).

[78] Merrett, *The Art of Glass*, 245.

[79] NRA(S) 888, Bundle 3477.

[80] It has been impossible to find a definition of 'mortar' glasses in the literature, but a paper in the Hamilton archives has provided an answer to the puzzle. It describes them as 'small drinkeing glasses'. (NAS, GD406/M1/28/18).

[81] 'Diary of Sir James Hope', 145

[82] Hopetoun ms. NRA(S) 888, no bundle no.

[83] *Edin. Burgs., 1406-1700,* 282.

[84] *Edin. Marriages 1595-1700*, 369.

[85] *RMS*, ix, 1566.

[86] See chapter 10.

[87] *Nicoll's Diary 1650-1667*, ed. D. Laing (Bannantyne Club, 1836), 88, 99.

[88] *Baillie's Letters and Journals iii, 1637-1662*, ed. D. Laing (Bannantyne Club,

1842), 389.

[89] *Register of Internments in the Greyfriars Burying Ground 1658-1700,* ed. H. Paton (SRS, 1902), 350.

[90] NAS, RD4/6/290.

[91] *Select Remains of the Learned John Ray* (London, 1760), 194.

[92] A. Fleming , *Scottish and Jacobite Glass* (Glasgow, 1938) 101.

[93] NLS, Adv. Ms.25.3.4, f.42; *RPCS*, 3rd Ser., i, 155.

[94] NAS, RD2/9/253.

[95] NAS, RD4/6/290. Dagnia witnessed the bond entered into by Visitella in July 1662.

[96] NAS, RD4/11/430.

[97] NLS, IGI, on CD Rom.

[98] Vose, 'Haughton Green', 24-30.

CHAPTER 6

LEITH

Of all the sites discussed in this thesis, Leith has the best known and longest lasting association with the glass industry. The first glasshouse was built there in 1663 and the last glass cone was demolished in 1912, although production had stopped some forty years earlier.[1] During more than two centuries of production, the site of the glasshouses changed; the first one was built in the Citadel, the next in North Leith, near the river bank. In the late 1740s, a new cone was erected on the sands of South Leith and that site remained the centre of production, expanding at one point to encompass seven cones.[2] Numerous different partnerships were involved over time, making a range of products, including, by the end of the eighteenth century, very fine crystal, but throughout the whole period, the mainstay of the industry was bottle production.

Before discussing the glassworks at Leith, however, mention must be made of an unrecorded glasshouse at Newhaven, the fishing village adjacent to, but quite separate from, North Leith. William Maitland, writing in 1753, does, in fact, refer to a glassworks there,[3] but no further information appears to have been published about it. Maitland wrote:

> The Remarkables of Newhaven are as follows: At the Eastern End of the Village was a Ropery erected by ... King James IV, the Vestigia whereof are still remaining along the Coast for a considerable Space. Adjoining to the Eastern End of the said Village was a Glass-house, and hard by a Salt-work, both set up by Englishmen. [4]

Irons[5] names three 'Englishmen' who were granted tacks of ground at Newhaven for making salt in 1567, as Anthony Hickman, John Achille, and Cornelius du Vois. In fact a letter from Queen Mary of 24 May 1567 granting them the land, described them as 'merchants in London', which is not necessarily synonymous with being English.[6] The same ground was transferred in November 1597 to Eustachius Roche, a Fleming, 'for the making of Great Salt with the houses, Biggings, Stone, Timber, and Dykes thereon'.[7] The land in question was bordered by the sea on the north, the 'Common passage' to the south, the great craigstone on the east and 'the Common passage before the Fisherhouses' on the west. Papers in the city chambers show that the site

was occupied by a Hugh Brown and others in the early seventeenth century, [8] but none of them mention a glassworks.

Two further references have come to light, which confirm that there was indeed a glasshouse at Newhaven, but which give no indication of its date. On 5 June 1724, the North Leith Kirk Session minutes record the decisions of a committee set up to divide the parish into 'quarters'. Newhaven had been part of the parish of North Leith since 1631, when it was transferred from St. Cuthbert's.[9] The committee divided Newhaven as follows: 'From the Crew inclusive all the South Side of the Street and part of the North Side of the Street of New Haven that surrounds the old Glasshouse', and 'From the bounds of the old Glasshouse to the West end of the Town on the North side of the Street of New Haven.'[10] At this period, Newhaven consisted of two rows of houses on either side of the main street, which ran parallel to the shore, alongside the harbour. There was an open space of some three-quarters of a mile before the boundary of North Leith, some of it designated as Newhaven Links, part of which was used as the ropery referred to by Maitland.

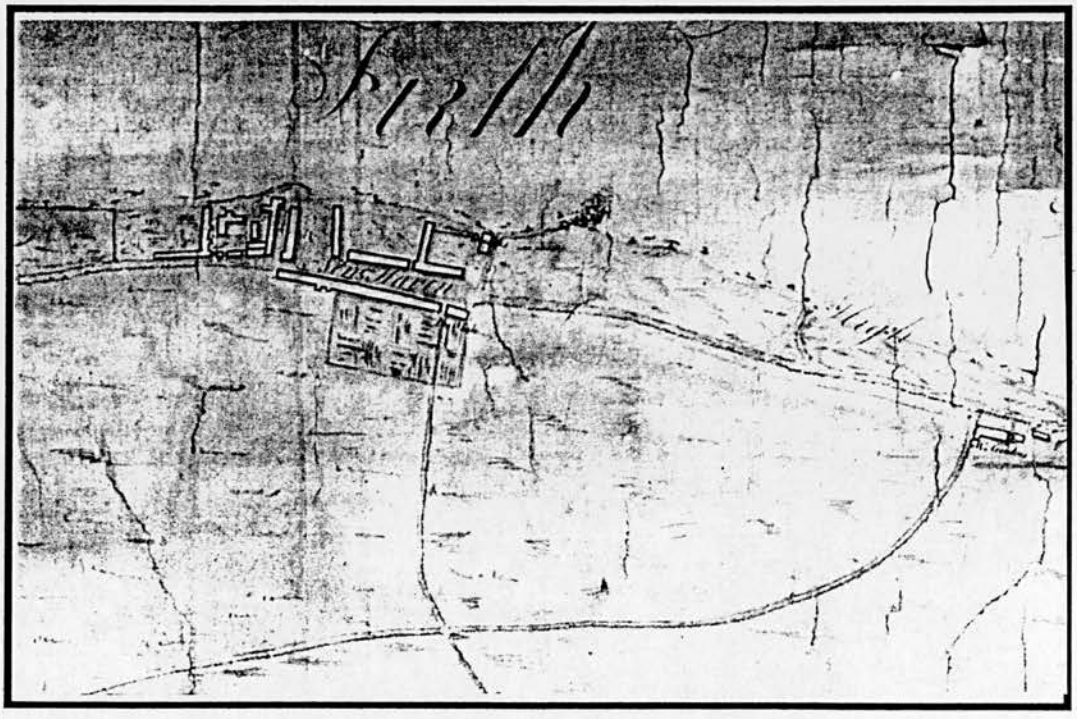


Fig.15. Newhaven, 1759. (Detail from 'Plan of the Lands belonging to the City of Edinburgh...', Fergus and Robinson). (Courtesy of Edinburgh City Archives, copyright RCAHMS).

In 1742, Edinburgh town council authorised the city treasurer, David Inglis, to 'sell and dispose of the stones and other materials whereof the old Glasshouse near Newhaven is composed to the best advantage he can.'[11] It is significant that, even eighteen years after the glasshouse was first described as 'old', sufficient stone remained to be worth salvaging, which does seem to indicate a substantial structure. Although the town council records refer to a site 'near', rather than *in* Newhaven, it is not feasible that they could have meant the Citadel glassworks, since all the indications from the council records are that the Citadel was always precisely referred to. The term 'near Newhaven' may simply indicate that it was on the fringe of the village nearest to North Leith, a supposition supported by the 1724 description, which implied that the glasshouse site marked the eastern end of the built-up area of the village.[12]

It is possible, although without evidence it is purely speculative, that Newhaven was the site of one of the very early glasshouses, built under the auspices of Sir George Hay, in the period 1617-20s. Certainly Emanuel Mether must have owned a sizeable concern to warrant the investigation of a privy council committee in 1620.[13] If James Ord's glasshouse was indeed at Morison's Haven, as suggested in chapter five, the locations of the three other glassworks, belonging to William Ward's brother, William Crawford, and Emanuel Mether, remain unknown, although one of them must have been at Wemyss. It is, therefore, not beyond the realms of possibility that Newhaven was the site of one of the others.

The start of glass production at Leith itself dates from 1663, when one of the earliest newspapers to be published in Scotland, the *Kingdom's Intelligencer* for 12 -19 November 1663, printed a notice:

> That there is a new frame of a Glass-house erected in the Citadel of Leith, able to serve the Country with all sorts of Glasses, white and green, and of all cullors, better Mettal and cheaper than can be brought from abroad.[14]

That notice was reprinted each week until 24 December 1663, when the well-known 'Remarkable Advertisement to the Country and Strangers' appeared. Since it provides information about both products and prices, it is worth reproducing in full:

> That there is a Glass-house erected in the Citadal of Leith, where all sorts and quantities of Glasses are made and sould at the prices following; To wit, the Wine-glass at three shillings two boddels, the

> Beer glass at two shillings six pence, the quart Bottel at eighteen shillings, the pynt bottel at nine shillings, the chopin Bottel at four shillings six pence, the muskin Bottel at two shillings six pence, all Scots money; and so forth of all sorts, conform to the proportion of the Glasses, better stuff and stronger, than is imported.[15]

The precise site of the glassworks cannot be determined, except that it was within the confines of the citadel. The reason for the choice of site is not clear, since it was not adjacent to a source of fuel nor a harbour, so all raw materials would have required sea transport and some land carriage.

The construction of the Leith citadel, on Cromwell's instructions, in 1656, is well documented. Robertson and Wood show that it was built in a heavily populated area of North Leith, on land obtained by purchasing and demolishing tenements, houses, shops and a barn, as well as using garden ground.[16] General Monck, describing the defences in a letter to Cromwell in 1657, wrote that the walls were 'thick with stone and clay', and that it was surrounded by a moat.[17]

When John Ray visited Leith in 1661, he devoted a paragraph of his journal to a description of the citadel:

> There are three forts advanced above the rest, and two platforms; the works round about are faced with freestone towards the ditch and are almost as high as the highest building within; and withal thick and substantial. Below are pleasant, convenient and well-built houses for the governor, officers and soldiers, and for magazines and stores; there is also a capacious chapel, the piazza or void space within is as large as Trinity College in Cambridge great court. The building cost £100,000 stg; indeed I do not see how it could cost less.[18]

Most of the English soldiers were withdrawn from Leith in 1660, following the Restoration, and in July 1661, Charles II ordered that the citadel should be demolished, except for the northern portion 'which formed a defence against encroachment by the sea'.[19] The land was granted to the Earl of Lauderdale, who, for £6,000, sold to Edinburgh: the 'Cittadel of Leith and pertinents' and all the property, lands, 'haven and port ... possessed or acquired by the late usurpers', all of which was transfered to the town under a charter of 1663.[20] It was bounded by 'the Links, commonly called the Links of Newhaven belonging to the burgh of Edinburgh and the sea at the lowest ebbing thereof on the north and west;' and extended eastwards as far as the Water of Leith. (Fig.16).

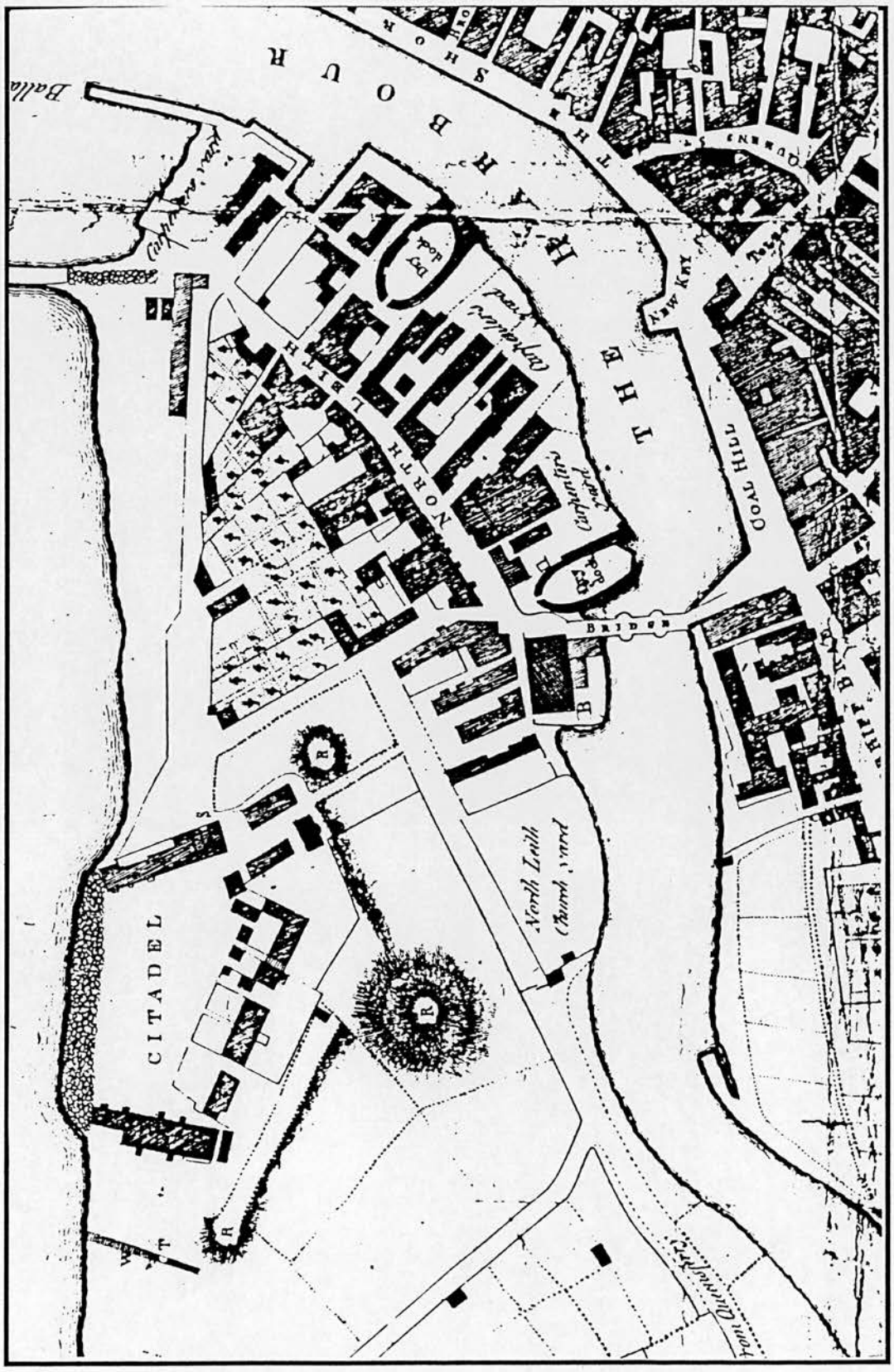


Fig.16. Plan of the Town of Leith, Alexander Wood, 1777.

Robertson and Wood reiterate an often-repeated statement that, while Monck lived in Leith, 'he induced some English families of considerable wealth to settle in Leith, by whom, it is said, the glass industry was introduced into this area'.[21] No evidence is offered to support this theory, although the registers of the South Leith parish church did refer, in 1654, to an increase in their seated accommodation, allocated to the 'English families in the Citadell (Traffekers)'.[22] 'Trafficker' meant go-between or negotiator,[23] suggesting that the English were certainly involved in business there.

The glassworks in the Citadel were set up not by an Englishman, however, but by a Scot: Robert Pape (Paipe, Pope), who came from a family of lawyers. He was the second son of John Pape of Pleasands yr., advocate, whose father had been a writer to the signet.[24] His older brother was John Pape of Wallyford. On 16 April 1664, Robert Pape married Margaret Somervell, daughter of James Somervell of Edinburgh and Lilias Bannatyne,[25] and on 4 June of that year, he bought Fairliehope, 'in the Baronie of Linton and sheriffdom of Peebles'.[26] The marriage contract, in which Robert Pape is described as 'maister of the glass works in Scotland', which was signed on 2 June 1664, set Margaret Somervell's dowry at 4,000 merks.[27]

It has already been shown in chapter four that Sir George Hay's patent, granting the sole right to make glass in Scotland, had been renewed in 1634, and again, in favour of his grandson Charles Hay, brother german to William Earl of Kinnoull, on 16 October 1661.[28] Charles Hay died on 11 September 1663, and was buried at Holyrood Church[29] but he had already, on 29 July 1663, 'for ane certaine somme of money', transferred his patent rights to James Marquis of Montrose and Dame Anna Douglas, countess of Kinnoull, his mother. (Ann Douglas, eldest daughter of William Douglas, Earl of Morton. She died in 1667).[30]

About two weeks before Hay's patent rights were transferred to his relatives, on 17 July 1663, a contract was signed between Charles Hay and Robert Pape of Fairliehope, granting Pape 'the full and only priviledge of making of all sorts of glasses and of erecting of glass works' in Scotland for two years from lambas (1 August) 1663. Pape, with William Halyburton, merchant in Edinburgh, as cautioner, agreed to pay Hay 1,400 merks Scots, for each year of the agreement, spread over the two years, the final 700 merks being due on 1 August 1665.[31]

The next day, 18 July 1663, the man previously authorised by Charles Hay to produce glass, Jacob Visitella, 'glassmaker in the Westpans',[32] signed an agreement with

Robert Pape, renouncing all the rights which had been granted to him by Charles Hay in favour of Pape. He bound himself to 'worke no more in glasse except ane power or licence sal be granted to me for that effect by Robert Pape in whose persone the said Charles has transffered his wryght ...' under penalty of £100 Scots.[33]

There is a further legal document in the National Archives of Scotland which is related to ownership of the patent. It is witnessed by the Earl of Kinnoull, among others, and, after referring to the deed transferring Charles Hay's rights to themselves and the subsequent licence for Robert Pape to make glass, states that James Marquis of Montrose and dame [blank] Douglas Countess of Kinnoull declare:

> That we have payed no soumes of money nor done any good deid to the said Charles Hay for the makeing and granting to us of the forsaids tuo severall assignations Bot that our names are onlie borrowed thereto and intrusted therein for the use and behove of James Hay [the third son] brother germain to the said Charles Hay Thairfor witt yee us to be bind and obleist ... to make just compt reckoning and payment to the said James Hay his heirs [etc.] of whatsomever soumes of monie or other benifit profeit or comoditie whatsomever it shall happene us or any of us to obtaine and recover be vertew of the saids tuo severall assignations...[34]

The patent appears to have been held in trust for James Hay who certainly owned it in 1671, by which time the Marquis of Montrose and the Countess of Kinnoull were dead. In August that year, he signed an agreement transferring the rights to his sister Lady Margaret Hay, who had 'consented and payed to me ane certain soumme of money and done other good deeds' for the privilege.[35] Such agreements confirm the value to the Hays of the glass patent and the income gained from it, and re-emphasise their continued control of the glass industry.

Robert Pape's licence began on 1 August 1663 but it was not until 12 October that year, that he signed a contract with Edward Dagnia, the glassmaker who had, in 1662, witnessed a bond for Jacob Visitella.[36] The agreement set out the obligations of both parties and is important in its details.

Robert Pape, 'as master and owner of the glasswork within the Citadel' bound himself to furnish the metal, coal and everything else necessary for the glasswork, for the whole period of his 'tack licence and patent' granted by the deceased Charles Hay, 'to

the effect the said glassworkes be not laid wast void or cease throw the said Robert his fault'. He also agreed to pay Edward Dagnia weekly for:

> all the glasses the said Edward shall make and delyver to the said Robert or his clerk good sufficient sailable waire conforme to the raittes following. That is to say
> for the hundreth vialles ane shilling sterling
> for the hundreth halfe mutchkine violls two shilling sterling
> for mutchkine violls three shilling sterling the hundreth
> for chopin violls six shillings sterling the hundreth
> for all wyne glasses bottells one dozen of [and?] thrie and of all other kyndes of grein glasses conforme to the pryces wherefor the samen sall happen to be sold and raits of the other glasses above specified
> In lyke manner of whytt mettall ffor the hundreth [?] two shillings sterling
> for the hundreth beir bell fyve shillings
> for wyne smaill ten shillings the hundreth
> and for all other sorts of wytt glasses conforme to the raittes aforesaid.

Dagnia agreed to deliver 'ten more and above everie hundreth and thrie more and above everie dozen' of all sorts of glasses.[37]

The range of products Dagnia was to produce is interesting, including as it does both white (clear) and green glass. It is no surprise that the vials and bottles were to be in green glass, nor that the beer 'bells' and wine glasses were to be in white, but it does raise the question of whether both could be made in one furnace, given the different temperatures required.[38]

One crucial aspect of their contract is that Pape also agreed to pay Edward Dagnia five shillings sterling a week for making the pots, preparing the white or green metal, to Pape's orders, and performing the duty of conciator. Dagnia also undertook to take care of the tools and to supervise the workforce. Dagnia was obviously one of the master glassmakers possessing all the considerable skills necessary to run a glasshouse, from setting the fire, to preparing the frit, and from preparing and firing the pots, to blowing the glass. He also agreed not to leave during the time of the licence, nor to take time off unless he were sick, or Pape agreed he could do so. The contract was witnessed by James Somervell, Pape's father-in-law and George Abercrombie, writer in Edinburgh, of whom more later.

The Dagnias were Italian glassmakers, brought to England from L'Altare in about 1630, by Sir Robert Mansell. One branch founded the first recorded glasshouse in Bristol in *c.*1651.[39] Edward Dagnia's presence in Scotland in the 1660s is of considerable interest. He had his family with him, son Edward witnessed his signature in 1664[40] and his son John was old enough to act as cautioner for Edward senior's wife, Joanna Coo, in 1665.[41] Both were almost certainly working with him as glass makers, in the normal family tradition. The Dagnias are well-known to glass historians, usually in association with glassworks on Tyneside. An account of the family members working in Newcastle and South Shields was published by Herbert Wood in 1919.[42]

Wood did not attempt to trace the Dagnias before their arrival in the north-east but was fairly certain that they came from the family which had originally worked in Gloucestershire. Neither he, nor other writers, mentions any of them being in Scotland. Significantly, however, the 'Dagnia Family Pedigree', printed in Wood's article, begins with 'Dagnia = Joanna', who had children Onesiphorus (d. 1712), Edward (d. 1712) and John (d. 1717). Although Onesiphorus is not mentioned in known Scottish documents, it seems very likely that it was, in fact, these sons of Edward Dagnia 'master worker of the glaseworkes at Leith,[43] who eventually founded the glassmaking dynasty on Tyneside.[44]

Edward Dagnia senior died between 3 December 1664[45] and 18 October 1665, on which date his widow, Joanna Coo, borrowed £28 Scots from merchant James Cranstoun, promising to repay it by 2 February 1666.[46] In Onesiphorus's will, published in 1712, is an annuity to his wife Margaret of £20 and 'to my dear mother Joanna Dagnia the annuity of £6'.[47]

Robert Pape's adventure in the glass making business was not to run smoothly, as will be shown, but even the terms of his licence raise intriguing questions. Firstly, it seems strange to take on such a large capital investment for the very short period of two years, which appears to have included the time required to build the furnaces and set up the business. Given that the licence term began on 1 August 1663, and that the advertisement for his glass did not appear until 24 December, it would seem that five of the agreed twenty-four months were unproductive - a considerable proportion, and for which he had to pay a fee to the Hay family of approximately 583 merks. Secondly, there is no renewal clause in the agreement with Charles Hay, although it does not seem feasible that Pape should invest so much money without some long-

term plan; no-one could hope to recoup the capital outlay required to establish such an enterprise within such a short period, especially with the added burden of 1400 merks a year payable to the Hay family.

There is also, of course, the question of why the descendant of a family of lawyers should wish to enter such uncharted waters. It is possible that one clue may lie in his mother's surname - Haliburton. John Paip's marriage to Geillis Haliburton on 12 June 1629 is recorded in the Canongate parish register, (she died in September 1645);[48] Robert Pape's cautioner, in his agreement with Charles Hay, was William Haliburton, merchant in Edinburgh. It may, of course, be entirely co-incidental, but the mother of Sir George Hay, owner of the first patent to make glass in Scotland, was Margaret Haliburton (d. 1633), daughter of Sir James Haliburton of Pitcur.[49] There may, therefore, have been a family connection, through the maternal line, between Robert Pape and the Hay family. Ownership of the glass patent was not *per se* of any financial value to the Hays, of course, so it would have been in their interest to encourage investment in a new glassworks at the end of Jacob Visitella's tenure, in order to ensure continued income from the licence.

Pape appears to have experienced difficulties in selling his glass from the beginning. Only about six weeks after the advertisement appeared in the *Kingdom's Intelligencer*, on 9 February 1664, he petitioned the privy council for the prohibition of imported glass, except for window glass. After the usual preamble, saying that he had spent 'his whole estate and fortune for advancment of the publick good' in building the glassworks, he put forward a conspiracy theory to account for the lack of sales:

> such is the humour of some merchands and inclination to ruine and destroy all publick workes wherby either credit or benefite may aryse to their nation, that they not only abstain from buying all glasses maid in the said glasshouse, bot also doe import great quantities of glasse from abroad, wherby the said work will be altogether rendered uselesse and unproffitable, ther being such a multitude of the glasses already made therin unsold, which, with these that the work is easily able to affoord will be more then will sufficiently serve the whole countrey.[50]

He was granted his request and all imports, apart from window glass, were banned on pain of confiscation.

Since merchants presumably had to order their imported goods well in advance, this measure does seem somewhat draconian. It is impossible to assess the truth of Pape's allegations. The volume of shipping in mid-winter was much less than during the months of more clement weather[51] and it is hard to understand why local merchants should be so antagonistic; if he was unable to sell his products, it seems likely that he was producing too much for the market. He was not the first, nor last, entrepreneur to experience that problem. Nevertheless, as will be shown, Sir James Standsfield complained to the authorities in precisely the same terms in 1687, some twenty-three years later, so they may both have had good grounds for their assertion.

The prohibition did not resolve Pape's difficulties; on 24 March 1664, he again appealed to the privy council, claiming that, despite the earlier act, 'a great deal of foreign glass has been privatly imported and stored in cellars in Leith, and there is word of more to come...'. He asked for authority to search all ships suspected of carrying glass, to require masters and merchants to declare what they imported, and the customers to declare what quantity they received duty for. Finally, he requested permission to examine the custom books and to open and search all cellars and houses suspected of containing imported glass. The privy council referred the petition to the treasurer, so that he could, from time to time, 'upon the petitioners information, give order for seazing and confiscating all such glasses...'[52]

To compound his problems, George Abercromby, the man Pape had appointed as clerk to the glassworks, had absconded 'without accounting for his intromissions'. Recourse once more to the privy council, on 14 July 1664, led to a warrant for his arrest and imprisonment 'until he make account and payment ... of his glasses and others entrusted to him, or the price thereof'.[53] It seems reasonable to assume that George Abercromby was the writer who had earlier witnessed Robert Pape's agreement with Edward Dagnia.

It appears that, at least for a time, production at the glassworks ceased. In a case heard by the regality court of Edinburgh, in April 1664, a glassmaker called Matthew Demarin claimed that he had signed a contract with Robert Pape on 22 October 1663, to make glass at the citadel, for a specified period, at set prices. However, since 6 February 1664, Pape had 'not suffered his glasshous to be imployed', with the result that Demarin, a 'stranger', had no means of earning a livelihood. The court upheld Demarin's appeal that Pape should be ordered to provide him with employment under

the terms of his contract, or discharge him from it, so that he could move elsewhere. Pape was ordered to pay the £12 penalty, provided for in their agreement.[54]

There was also some disagreement between Robert Pape and Edward Dagnia, although this was resolved without recourse to the courts. On 30 August and 5 September 1664 an arbitration agreement was signed and witnessed, endorsing the resolution of their claims by John Jossie and Walter Cheislie, 'late bailies burgesses of Edinburgh'.[55] John Jossie had, of course, set up his own short-lived glasshouse in the 1640s and owned the land at Westpans on which Jacob Visitella had his glass furnace, so he had some experience of the industry. The arbitrators' remit was to sort out the penalties due to each party under their contract of 12 October 1663. Robert Pape was ordered to pay £34 1 10 sterling to Edward Dagnia before 1 November 1664, while Dagnia was found to owe him £3 for 'six [illegible] pynt bottles sold be him to Mr. Thomas ?elers merchant in Leith' and a further 5s 4d for kelp.

The glassworks does not appear to have ceased production at that point, however; Edward Dagnia was still described as 'master worker of the glaseworkes at Leith', in a bond dated 3 December 1664.[56] By then, however, he was working for someone else. On 24 September 1664, only just over a year after his agreement with Charles Hay, Robert Pape's short-lived foray into glass production ceased, when he sold the right to make glass under the Hay patent to James Bell, merchant burgess of Edinburgh. Bell agreed to pay Pape 950 merks Scots before 2 August 1665, a date coincident with the end of Pape's licence.[57] Unfortunately, no further information about the citadel glassworks has been found. It seems very unlikely that so much money and effort should have been expended for an intentionally short-term project, but there is no evidence that the glassworks in the citadel continued to operate. Certainly the death of Edward Dagnia would not have been conducive to continuity, although it is significant that the Visitella family appears to have remained in the area. The glasswork may well have continued in production for some time, of course, since it seems likely that James Bell bought it as a going concern, and the lack of evidence that it continued, does not mean it did *not.* However, a statement made by Sir James Standsfield in 1687 confirms that it, too, failed eventually. Standsfield claimed that his own first attempt to establish a glassworks at Leith had been the third one to fail.[58] It seems reasonable to assume that the earlier two failed attempts to which he referred were those of Pape and Bell, although it is worth remembering that Margaret Hay apparently thought it worth while to pay her brother for ownership of the glass patent in 1671, so she must have thought it continued to have a commercial value.

James Bell was a common name in seventeenth-century Edinburgh, and it is difficult to be certain of the glassworks owner's identity. An entry in the register of deeds shows that a James Bell and his brother William set up as partners in 'trade merchandize and commerce' in 1664, with an initial joint capital of 33,000 merks. William was about to leave for Holland and the 'west of the united provinces for commerceing and doing of his other lawfull affeares'.[59] Other bonds in the register indicate that this James Bell and his family were very involved in commercial transactions until 1676, when his name ceased to appear. In 1668 a James Bell borrowed, jointly 'with my elder brother Adam Bell younger of Belford', £200 sterling from James Stansfield.[60] It seems that the whole family did business together, since a bond of 1670 was in the names of 'Andrew Bell of Belford, Adam Bell younger thereof my oldest lawfull sone and William and James Bells merchants burgesses of Edinburgh'.[61] Unfortunately, none of the many deeds examined relates to the glass industry.

Whether or not the citadel works continued, the next glasshouse to be built was on a more obviously suitable and more clearly identifiable site in North Leith. On 14 February 1673, a charter was granted by the magistrates of Edinburgh to Sir James Standsfield of Newmilns, of a plot of land in North Leith, fronting onto the river and to the seaward side of the then bridge.[62] The various sasines relating to this plot of land describe it in the usual manner, naming the individuals owning adjacent sites. These can be difficult to trace but in this case the southern boundary was the Water of Leith, where a quay was later built (or an existing one was improved), for the use of the glasshouse. Sue Mowat, in her book *The Port of Leith*, shows that John Sime, 'premier shipbuilder in North Leith', petitioned Edinburgh council in 1770 for assistance with his plan to build a dry dock on the site adjacent to Glasshouse Quay.[63] Permission was granted, and Simes's dock is prominent on subsequent maps, so defining the site of the earlier glassworks. (Fig.17).

Sir James Standsfield of Newmilns (d. 1687) is best known for his involvement with the well-documented woollen manufactory at Newmilns, in which he was the major shareholder, with an investment of £300 sterling,[64] and the circumstances of his death in 1687. He came originally from Yorkshire, but moved to Scotland in 1650 and acquired the land near Haddington on which the woollen mill was built.[65] He was knighted by Charles II and is described by Scott as, in 1681, a man of considerable wealth.[66] In 1660 Sir James Standsfield was created burgess and guild

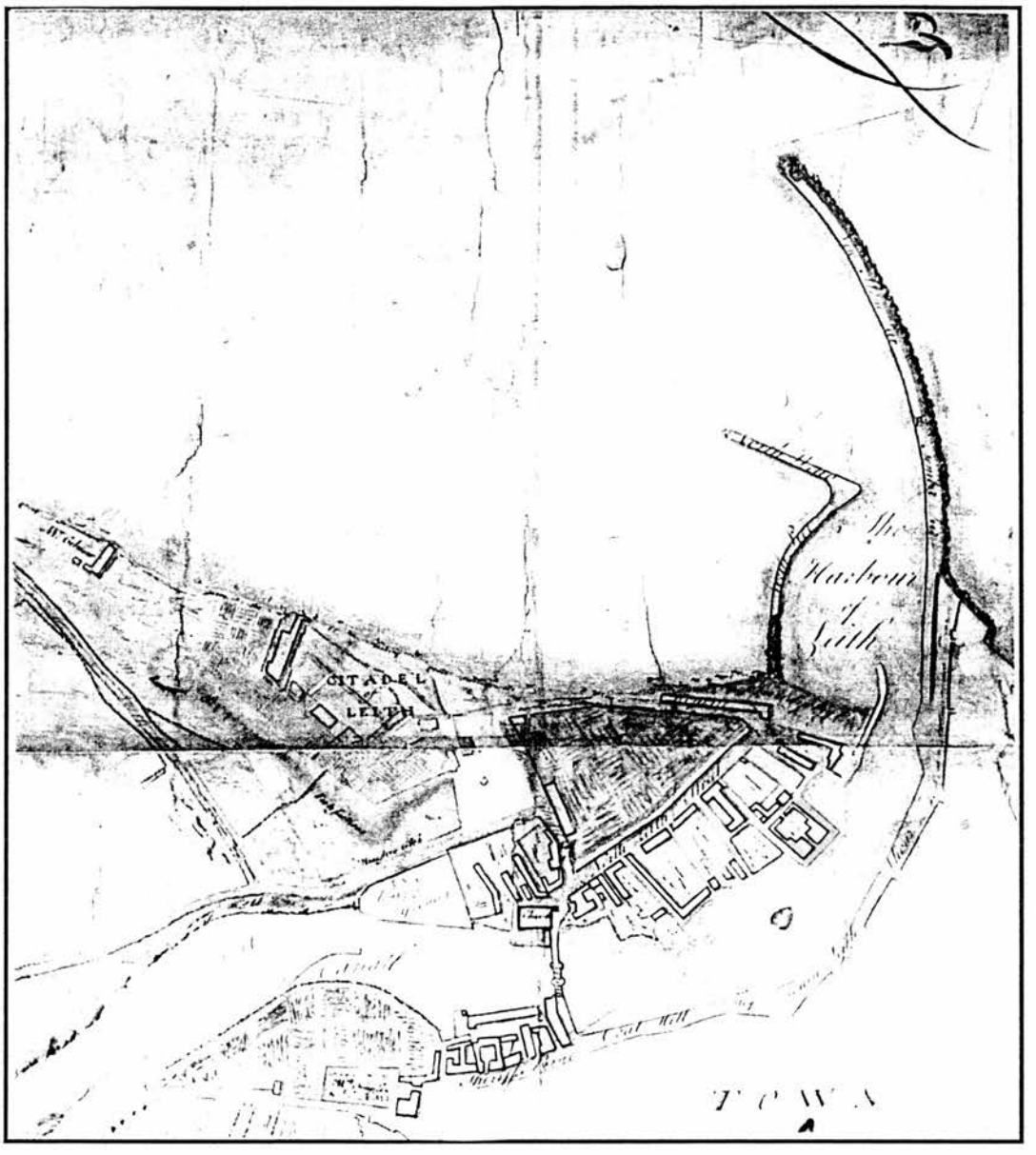


Fig.17. North Leith, 1759. (Detail from 'Plan of the City of Edinburgh...', Fergus and Robinson. Courtesy of Edinburgh City Archives, copyright RCAHMS.)

brother of Edinburgh, gratis, and £5 was voted to him for his service to the town. He was clearly interested in setting up businesses on property he owned; in addition to the Newmilns venture, he was co-partner in a brewery, also built on his land.[67] He also had shipping interests; in 1674, for example, he owned a quarter of the *Castle of Edinburgh*,[68] and he sold merchandise, including glass, overseas.[69]

The glassworks on his land in North Leith was built in 1678 and was still subject to the Hay patent. On 24 January 1678 Lady Margaret Hay, for 'ane certaine somme of money', assigned her rights to the four original co-partners, 'conform to their proportionall pairts'. They were Archibald, Earl of Argyll and Colin, Earl of Balcarres, who had a quarter share between them, and Sir James Standsfield and James St. Clair of Roslin, who owned the 'other threi fourth pairts... equall betwixt them'.[70] The co-partnership agreement between the four men was signed about three weeks later, on 18 February 1678. They agreed to the 'erecting and upfitting of ane glassework within the toune of North Leith ... furnishing all materialls for upfitting and maintaining the same and keeping of servants thereto.'[71] They were to provide between them £5,000 Scots, in two equal instalments, the first before 1 March, the second by 1 June, and whatever extra sums were deemed necessary by the clerk to maintain and carry on the business, to a maximum of £6,000 Scots, (although there was a proviso that this sum could be exceeded if all agreed). They were to meet at the glasshouse twice a year, in order to examine the accounts and the products. Sir James Standsfield and James St. Clair were the two executive partners, empowered to make decisions, give orders and agree wages, but they were expected to consult with the other partners if they were in Edinburgh at the time. After three years, a partner could withdraw his stock, but was obliged to offer his share to the other partners in the first instance, and other partners could be admitted on the same terms. If one of the partners failed to make the agreed payments, he would lose his share of the patent rights, which would pass to the others.

An entry in some extant accounts records: 'By allowance to the Lady Mary Hay for the Patent for makeing glass £333 06 08' (Scots), (the date is not stated, but is probably 1678),[72] which might imply that it was an instalment, being exactly one third of £1000, but that cannot be confirmed.[73] The dates of the new glassworks are somewhat confusing. There is an extant warrant dated Edinburgh 11 January 1678, addressed to Thomas London the glasshouse in Leith, authorising him to pay John Montgomery and his servitor eight shillings sterling a week, starting on 13 January.[74] It is likely that they had been contracted to provide the technical expertise in anticipation of the legal agreements. Certainly the glasshouse appears to be been up and running quickly; by May 1678, at least three more glass blowers, Daniel Kirby, John Richards and John Baptista Mercier were working there,[75] all of them having been recruited in London.[76] An account submitted by John Baptista Mercier indicates that he took over the role of conciator (founder) when required in October 1678.[77] In fact, he appears also to have been involved with the construction of the subsidiary

furnaces, since he charged for a week 'for makeing of the Calker' and 'ane other weeke for makeing of the Lear of the forneis', as well as for calcining the metal. Jottings on the back of his account list vials (7384), mortars (2037), wine (370) and half pints (206), presumably items produced at that time, but no date is given. More building work took place at the end of 1679, when the town council of Musselburgh granted the owners of the glassworks permission to take eight cartfuls of stone from the town's quarries 'for the use of the said Glassworks'.[78]

John Farquhair was employed as glasshouse clerk, and by October, they had been joined by William Barrow.[79] A list of the wages paid to them to the end of November 1678 shows the payment each individual received on a weekly basis, the most common amount being £12 Scots. Their earnings varied considerably, however, as did the time between payments. Daniel Kirby, for example, received £12 on May 2nd and 18th, and again on June 5th, 10th, 16th and 29th. His next payment, of £18, was not until July 20th, followed by £17 on August 10th, £13 on the 24th, and £5 16 0 on the 31st. The total wages bill for the five men, from the beginning of May to the end of November, was £920 7 10 Scots.

By the end of 1678, Sir James Standsfield was trying to obtain experienced glassmakers and gatherers from Newcastle, but with only limited success. The men already *in situ* appear to have been bottle and drinking-glass makers, and it seems that he wanted to expand into the manufacture of window glass. Three interesting letters concerning Moses and Joseph Henzell, members of another well-known glass-making family, are extant, and demonstrate very clearly the difficulties experienced by glasshouse owners in obtaining staff.[80] John Leaman in Newcastle, acting as intermediary, wrote to Standsfield on 31 December 1678, saying that the Henzells did not wish to become partners in the business, and were 'very haughty spirited men', who insisted on high charges and stringent conditions, despite being 'bare of silver'. He enclosed with his letter another from Moses Henzell himself, setting out their conditions, which were obviously based on some knowledge of the glassworks at North Leith. The Henzells demanded £5 sterling each, in advance, and that all their tools should be made in Newcastle, at Standsfield's cost. They were not happy with the furnace design, wanting the 'lonnet hoole of the stoock hooll' a foot lower and twice the size.[81] He also wanted to ensure that they would suffer no loss if their working hole was too small to produce the expected '12 score foot' daily.[82] Godfrey calculates that a team usually produced 3 cases of glass a day, each containing 15 'wisps' of three sheets tied together with straw. Henzell said he would try to bring

gatherers with him, but that Sir James Standsfield would have to provide lodgings and fuel for them at his own expense, as well as their transport costs.

Standsfield replied on 24 January 1679, a letter acknowledged by Moses Henzell in his answer of 4 February, in which he demanded a signed and witnessed bond agreeing to their conditions, as well as a letter to John Leaman 'to agree with the smith for makeing the tooles, and we will see that they shall be well done'. He was adamant that no gatherer would go to Scotland unless provided with free accommodation; 'Therefore Sir, if you would have your worke furnished with good servants which is the key of a worke, you must come to the rates...'. He expressed his hope that Standsfield did not 'desire to oppress nor abuse us... or be against that which is soe rationally and reasonably desired', finally pointing out that 'we heare that there is neither clay, nor potts, ready', and offering to provide some if Standsfield paid.[83] A final sting in the tail is the *post script,* informing Standsfield that Joseph Henzell had decided not to go to Scotland after all, but that Moses would bring a young glassmaker instead. He ends, 'wee doe expect that as the glas is made weekly wee must be pade weekly as the ffassion and custome off all glasshouses is'. The tone of his letter, and the nature of his demands, imply a man who knew well both his business and his worth.

Some men from Newcastle, did, indeed, go to work at North Leith, but Sir James Standsfield lived to regret their bargain. A letter from Onosiphorus Dagnia in 1681, which will be discussed more fully below, refers to the glassmakers from Newcastle as 'wicked sort of people', whose workmanship was 'but ornery'. He mentions a letter from Baptista Mercier, telling him that Standsfield had lent '£35 to pay his [the Newcastle workman's] depts and loose him out of prison and allsoe the rest had mony lend, nevertheless thire worst word in thire mouthes thay think to good for you'.[84] Moses Henzell is not mentioned by name, John Leggor(?) being the only man specified, but he may well have been the person referred to, since he appears to have been unemployed when recruited by Standsfield, perhaps implying a less than desirable character, despite the family's reputation.

The Hennezel (Hensey) family were working as glass makers in the Vosges area of Lorraine, from at least the fifteenth century, having originally moved there from Bohemia.[85] Kenyon, using material originally gathered by the Comte de Hennezel d'Ormois and Monsieur Georges Varlot, gives some details of the family's history.[86] Hennezels from the Darney area migrated to England in 1568, to work for Jean Carré

in the Weald, and their descendants worked in Stourbridge and Newcastle, their speciality being broad glass for windows. The French notes used by Kenyon provide an interesting insight into Moses and Joseph Hennezel's heritage. When they first came to England, the Lorrainers had refused to teach foreigners their methods, which were traditionally passed only from father to son, and then only to 'the descendants of the four ancient houses: de Hennezel, de Tysac, de Thietry [Tittory] and de Bisval', guarding their secrets being a matter of honour. An un-named contemporary English author described them as 'silent, haughty, masters of themselves'. Their status as 'gentilhommes verriers' was obviously lost as they became anglicised, but some of the character traits seem to have survived.

Apart from John Baptista Mercier, most of the other glassmakers recruited to work at Leith appear to have been English. (A complete list of those named can be seen in appendix 2). There was considerable financial outlay involved in recruiting such a workforce. Both Daniel Kirby and Baptista Mercier went to London at different times to set up contracts with glassmakers, who then had to be transported to Leith; for example, £50 4 0 Scots was paid to David Gillis 'for the passage of John Hannie, Andrew Newby, John Davie & their wifes'.[87]

Since the site of the glassworks was not adjacent to any of the raw materials required, they all had to be shipped in, and were obtained from a variety of sources. There are a number of extant accounts in the Standsfield papers, which show that coal was brought in from Wemyss and Sheriffhall, sand from Musselburgh, barilla and other unspecified materials from London. Tools costing the considerable sum of £262 2 0 Scots, were bought from John Leamon in Newcastle; bricks and ashes were shipped up from London as a return cargo, coal having been carried on the outward journey; kelp was obtained from Borrowstoneness (Bo'ness). There are many more entries where no source of supply is given.[88]

At some point during the early years of the North Leith glassworks, Sir Robert Gordon of Gordonstoun joined the co-partnership, and the share ownership shifted slightly. The Earls of Argyll and Balcarres retained their one-eighth shares, while Sir James Standsfield and James St. Clair of Roslin reduced their holdings to five-sixteenths each, and Sir Robert Gordon held one-eighth.[89] Their total agreed investment was £16,977 7 2 Scots.

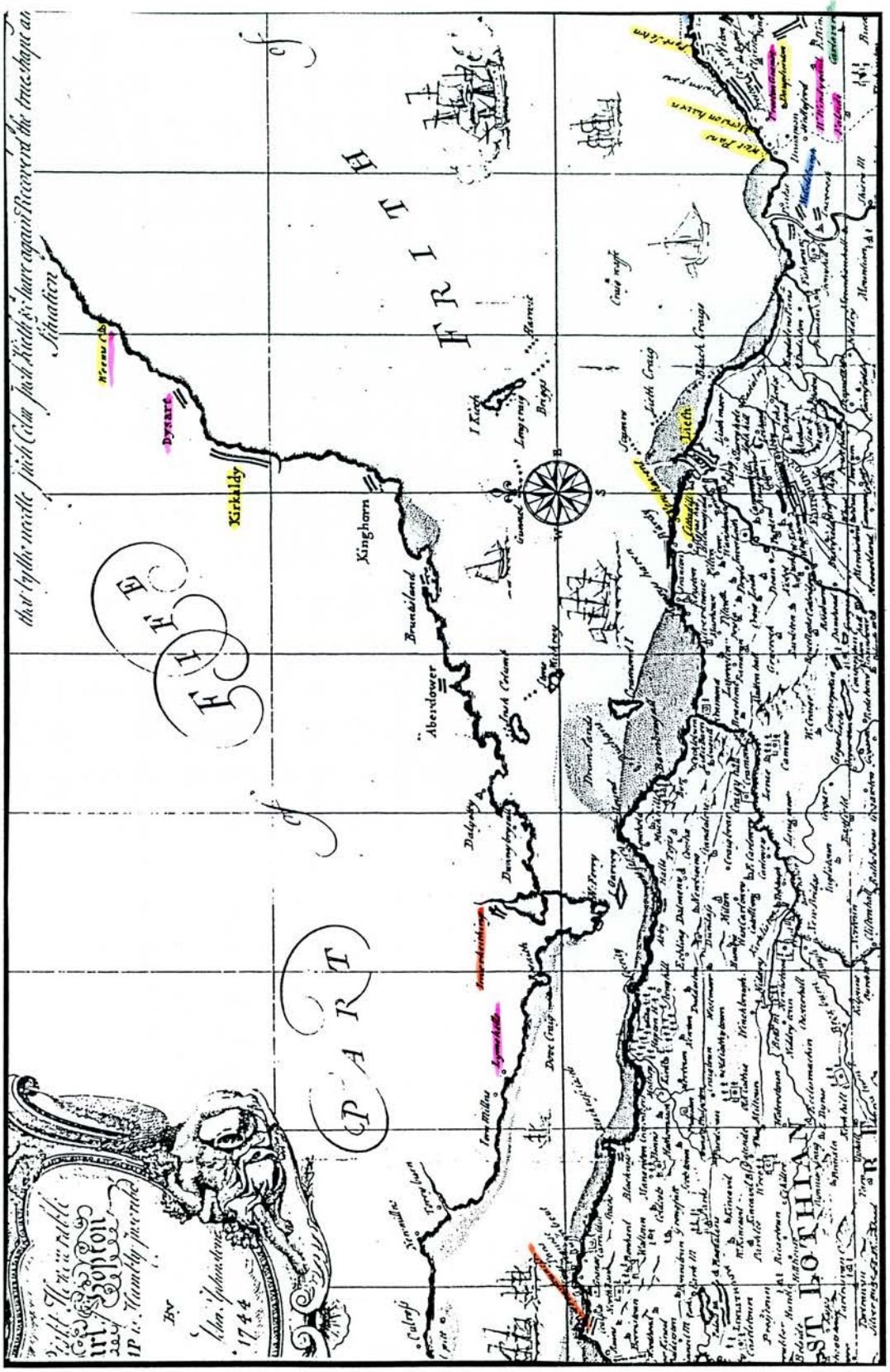


Fig. 18. Firth of Forth. Map of the Lothians, John Elphinstone, 1744. (Courtesy NLS).

On 16 June 1680 Sir James Standsfield sold two-thirds of the North Leith site to Sir Robert Gordon and James St. Clair, who each paid him 2,333 merks 4s 4d. The property consisted of 'the dwelling house yeard and pertinents underwritten viz: that great yeard within the toun of Leith...now containing ane tenement of land bigged therin with ane yeard at the back...'[90] They also agreed to pay one penny blench ferme to Standsfield and two-thirds of the feu duties payable to his superiors, the burgh of Edinburgh. However, ownership of the fabric of the glassworks was not included in the deal: 'the walls stone timber and instruments of the same glasshouse are noways included... but is hereby expressly declared to pertain and belong to me the said Sir James Standsfield, James St. Clare and Sir Robert Gordon according to our severall interests and partes of the glasswork and noe farder.' The agreement went on to state that, in the event of the dissolution of the copartnership, each of the remaining partners, who had met his obligations, 'shall be holden ...to cause transport their respective proportiones of the saids walls timber stone furniture and pertinents therof within the space of six monthes' or longer, if agreed, 'and free and void the ground of the samen'. Clearly the site and the buildings on it were of greater importance than the furnaces built there.

The affairs of the company do not seem to have gone smoothly, however. Even during its brief period of operation, it appears that the glassworks fire was out at times. An interesting letter from Onosiphorus Dagnia at the 'Glasshouse of Newcastle' (the Closegate glassworks), in June 1681, is among the Standsfield papers.[91] He begins: 'I understand by John Tyacke [Thysac, from the Lorraine family mentioned on page153] you have a mind to set forward your work againe if you could gett workmen'. He goes on to commiserate with Standsfield about his experience of the 'last workmen you had I am sertain there is not such another crewe in England', as discussed above, and continues:

> Sir if you are intended to put it forward againe I will bring others with myself that shall carey on your work with corrig and to profit (if we can agree) I think about 15 or 16 weeks worke will serve the contry, wich I can doe and follow my imploy hear, you will have no men relying upone you as for playing weages, (which other wais if you have a set of workmenof your owne and have not imployment for them will expect playing wages). If your worship please to bear the charges I will come over and give you the nearest account of what stock may serve for a 15 weeks fire in all particulars, and likewise will doe your business in bying your ashes for there is a great matter in

> your ashes, for there is ashes that one bushell will goe as far as one and a half of other sum which I have good reason to know. Sir I desire you to consider on it and return me an ancer with the first post, for I am intended for London spedily. If I can doe you any favouris I shall be willing to doe it. I once writ before concarning your wight? work but received no ancer, John Tizack tould me you received my letter...

There is no evidence to suggest that Standsfield took up the offer, and it is difficult to know whether what, on the face of it, appears to have been a sensible and reasonable suggestion, bearing in mind the small Scottish market, was actually an act of kindness, or a cynical commercial ploy designed to ensure that a rival glasshouse should not continue in opposition to Dagnia's own. Certainly the Newcastle glassmakers would have been very happy to supply the Scottish market themselves, and to avoid the competition for skilled workmen, but the tone of the letter is concerned and friendly, and Onosiphorus had almost certainly lived in Scotland, when his father worked at Westpans and the Citadel. His comment about fifteen or sixteen weeks work 'serving the country' is significant. Godfrey shows that most glasshouses expected to work between thirty-five and forty weeks a year, allowing for repairs to the furnaces.[92] In Dagnia's view, therefore, the Leith glasshouse was likely to produce at least double the market capacity, although the likelihood of longer periods of stoppage may have been greater in Scotland at that period, because of the lack of available expertise and other difficulties.

It is clear from the accounts that bottles, vials, drinking glasses and window glass were made at North Leith between 1678 and 1682, an ambitious range of products, confirmed by the roup inventary discussed below. One payment listed is 'To Mr. Bristoll for 2 brass mools for drinking glasses'. These would have been the moulds into which glasses were blown, like those discussed between Cornelius Visitella and Sir James Hope of Craighall in 1647. Payments in 1682 to Baptista Mercier ' for his tyme & attendance in London buying Barilla and other materialls for the Glasshouse', and for the hire of a horse for him to bring a parcel of manganese from the Hopetoun lead mines, 'for a trial', also confirm that good quality white glass was being made.

A puzzling entry is the sale by John Baptista Mercier of three 'stamp glasses' for 6d, while thirty-one 'stamps' were sold by Daniel Kirby for 10s 2d Scots and fifty-seven by John Ward (Montgomery) for 9s 8d. If the reference were to stamped *bottles*, it would be reasonable to assume that it meant that they were sealed, or 'marked', the usual description in Scotland; but there are separate references to bottles in the

accounts, so it seems unlikely that 'glasses' and 'bottles' would be used synonymously in this case. It is possible that the term 'stamp' refers to the metal die, engraved with initials or a symbol, used to create a seal, in the manner described by Ruth Vose: 'Seals...made from a blob of hot glass dropped on to the side of the bottle and stamped with name, initials, rebus, arms or sign of the owner'.[93]

Responsibility for running the glasshouse also changed during the first partnership. In October 1680, Alexander Young, who later bought up the rouped glass, sometimes referred to as 'Captain Young', appears to have taken over, and he compiled an inventory of all the items not under lock and key at the glasshouse.[94] Since the extant inventary only covers those items not locked up, it has to be assumed that the more valuable objects, like the glassmaking tools, and expensive raw materials, were elsewhere. The first items on his list are sixty-six large, and sixteen small, clay pots, with twelve 'pott bottoms', presumably those in the process of being built. That is a sizeable number of pots, probably in various stages of readiness. There were six white iron plates, probably for marvering; clay and cullet in the cellar; and twenty-one 'crills for holding of brod glas', as well as eight chists of cut glass, (sheets of glass cut for windows). There was also a collection of old furnishings and battered barrows. It was not an impressive list, but one which confirms beyond doubt that window glass had formed a considerable part of the production.

A further inventary in the Gordon of Gordonstoun papers, compiled by George Hay and James Bristol prior to the roup in January 1683, which will be discussed below, provides further evidence that a wide range of products was made at North Leith.[95] Unfortunately, the page listing the glass in *situ* is badly damaged, with one section completely missing. Nevertheless, the surviving list is informative. It includes 13,617 [square] feet of window glass; beer glasses; crewets[96] and, bracketed together under the heading 'small glasses':

4332 Sougaroons[97]
965 Brandys
436 ordinary Brandys
1410 vialls
3870 houreglass vialls
16 marmalats
49 severalls

The exact purpose of some of these items is more difficult to interpret. What a 'sougaroon' was is hard to guess, but it seems likely that a 'marmalat' was designed to hold marmalade or jam.[98] The brandy glasses would not have been of the modern balloon shape - Newman suggests that 'early English glasses for drinking brandy were cylindrical tumblers',[99] so the Scottish shape is likely to have been similar. The large number of hour-glass vials is particularly interesting, since it is the only reference to them being made in Scotland which has come to light. The range of items produced is a clear indication that the proprietors of the North Leith glasshouse were attempting to provide the affluent local market with many of the goods, both luxury and practical, which had formerly been imported.

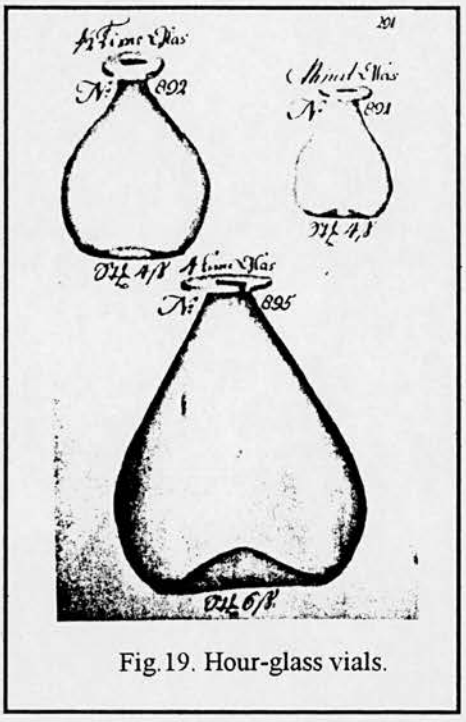


Fig.19. Hour-glass vials.

A second page of the inventory lists the tools and raw materials used in the two furnaces, under the headings 'Broad glass irons' and 'White Glasshouse irons'. Some of the terms used (combined with the inevitably idiosyncratic spelling) are impossible to interpret, but the lists cover a comprehensive range of essential items, including another '66 great potts and 6 little ones of clay whereof bottoms 51'; wood ashes, salt petre, sand, frit, cullet, and eight moulds.

The glassworks ceased operations at the end of 1682, although the original partnership was clearly in trouble a year earlier. A draft agreement, which is unsigned and undated, is titled on the reverse: 'Consent be the Earles of Argyle & Balcarres & others to [blank] for roupeing the glasswork in Leith materialls & others pertaining thereto 1681'.[100] A year later an 'Act in ffavours of Sir Robert Gordon of Gordonstoune & others', dated 2 December 1682, was granted in response to a petition to the lords of counsell and session by Sir Robert Gordon, Sir James Standsfield and Lady Roslin, executrix to the deceased James Sinclair of Roslin. They alleged that the manufactury had 'gone to ruine by the late Earle of Argyle and Earle of Balcarres their not advanceing of their shares and proportiones of money', according to the co-partnership agreement.[101] The petitioners applied for, and were granted, permission to hold a public roup of 'the tooles, instruments, ffurnitures and

utencills of the said glass work with the glasshouse ... yet lying useless at Leith'. Two of the lords, Sir Andrew Braine of Saline and Sir John Murray of Drumcairne, were appointed to oversee the roup and the distribution of assets. A final payment was made 'To the glassworkers after the fire was put out', on 21 December 1682,[102] in preparation for the roup on 5 January 1683,[103] and £91 for expenses incurred was paid in February 1683.[104]

The glasshouse, tools and materials were bought, for 890 merks, by William Blackwood, merchant in Edinburgh, the under-bidders being William Pattoun, James Rue and Alexander Young.[105] Blackwood was also underbidder for the other two lots. The window glass, bottles and other glasses were bought by Alexander Young, former glasshouse clerk, for 1,200 merks; the dwelling house was sold to James Rue for 2,100 merks. Blackwood obviously bought just the fabric of the glasshouses, not the land on which they stood. Despite the fact that the sale took place under supervision, there was much subsequent procrastination over the legal niceties, which resulted in long delays in paying out the proceeds. Sir Robert Gordon was still trying to obtain the money due to him in 1686.[106]

In the Standsfield papers are also some small clues to the glassworks site itself. In 1682, George Wilson, mason, was paid £361 1 6 Scots for 'rebuilding the peair about the glasshouse, repairing the lodging and furnishing thereto'.[107] Since the glasshouse had been built only four years earlier, it seem likely that the quay pre-dated it.

There is scant information about the immediate post-roup period; John Blackie, collector of North Leith, issued a receipt to Alexander Young, in July 1683, for £5 12 Scots in payment of the land stent for Sir James Stanfield's glasshouse, covering the preceding year to Whitsunday.[108] There is also a copy of an account, dated at Edinburgh, 4 March 1684, sent by Sir Robert Gordon to Sir James Standsfield, asking him to tell his servant to set out the account on a sheet of paper, and write above it: 'account due by the masters of the Glashous at Leeth to workemen and others given in by Sir James Standsfield and Gordonstoun to my lord Salin and my lord Drumcairn and at the bottom subscribe your name that I may put my name to it and then gett the lords hands to it.'[109] This was clearly part of their attempt to extract the money held by the lords, and appears to show that the workmen, to whom money was owed, were still in Leith, while it seems that Standsfield and Gordon remained active shareholders, and they may have recruited others to join them. James Scott Marshall, the Leith historian, states that the glasshouse closed in 1681 and that, at the roup,

Standsfield and Gordon 'bought the business between them. Alexander Ainslie was engaged as manager, and with more men from Newcastle production started again',[110] but no references are given.

One of the former partners, James St. Clair of Roslin, died leaving a massive debt of £55,979 5 9 Scots to two merchants in Rouen.[111] In a document signed at Windsor Castle on 20 September 1686, and registered with the court in Edinburgh, his heir, also James St. Clair of Roslin, sold to Alexander Hamilton, merchant in Edinburgh:

> all right title or interest which the said umquhil James Sinclair my father had or could pretend as one of the partiners of the Glasswork in Leith In and [?] the said Glassworke And to the Glasse houses window glasses botles wyne glasses tewellas and materialls belonging thereto and to the good stone lodgeing or tenement of land adjacent thereto betwixt and the water with the yairds and pertinents of the same with all soumes of money advanced and furnished by the said umquhil James Sinclair upon the accompt of his copartners in the said Glasseworke with all right or pretence he had for the same or which accr[?] to me as air to him...

He also assigned to Alexander Hamilton all rights to rents and any other money due from the glasswork and pertinents. The implication of this document is that either James St. Clair's heirs were still waiting for the money due to them from his share of the roup proceeds, or that he was still part-owner.

Although all the tools and many materials were *in situ*, the glassworks appears to have remained closed for some five years. Sir James Standsfield clearly wished to restart it, and wrote an optimistic letter to Robert Gordon of Gordonstoun in April 1687, which is of considerable interest.[112] He began by saying that, 'haveing mett with 2 Glassmakers who pretend to be bred Artists for makeing Christall and Flint glasses', he and Alexander Hamilton had sorted out a revised share allocation: Hamilton and Standsfield were each to have five-twelfths, and Gordon the remaining two. He planned to restart the glassworks, and to use all the materials on site 'which hath long laid useless to us' for crystal glass, the only material lacking being two hundredweight of manganese. Robert Gordon appears to have been in London, because Sir James Standsfield then asked him to buy the manganese, either at 'the Dutch pothouse' at Lambeth or 'Mr. Knight's pothouse in the Armitage' and to send it on the first available ship to Leith, for delivery to George Farquhar. (John Farquhar had been clerk to the glassworks in 1678). He promised to 'have them at worke within

24 hours after its arriveall', despite the tools being damaged by rust, and the rain 'comeing down thro' the plaister of most of the Romes.'

The letter then described the requirements of the glassmakers:

> For makeing fflint glasse and provision for 20 weeks fire and delivering wekely ?at ?least 1200 of [?] wyne and beere glasses of such sorts and shapes as desired and as good as any in England are viz: weekely 200 wt. of Salt Peter [potassium nitrate, providing potash][113] sold in Georges Yard on Tower Hill, 200 [?lbs] weight of white leade which is ordinarily called the dust of white leade for the use of a Glasshouse, which is sold by Doctor Savage neare to hockley in the hole at the bottome of Clerkenwell groove London. The particulars desired for makeing milk white glass is 20[?lb] wt. of Pulverine [ashes of barilla], 20 lb wt of Antimony to be had at any Drugstore in Cheapeside about 4d or 5d pr lb. it is to bee of a good silver collour, the buyer must breake a piece of it to try it be not hollow within.[114]

Opaque white glass, often called 'milk glass', was made in England from the late 17th century.[115]

James Standsfield continued his letter with a list of further ingredients 'for makeing toyes in shappie glass', which required half a hundredweight of 'Litteridge De Lore' (litharge, or lead monoxide was used to produce superior glass, and to prevent crisselling) and a quarter of a hundredweight each of white arsenic, yellow arsenic and flower of brimstone (sulphur).[116] The glassmakers, described as 'sharp men', who knew their business well, could make plate glass for mirrors and coaches, but not in large sizes. They had with them two servants and two 'firemen'. Robert Gordon was asked to find out the prices of flint glasses in England, and how they were sold.[117] The letter ends with the hope that 'wee may retrieve our former losses, if the men be as great artists as they pretend and prove honnest men'.

A contract was duly signed at Edinburgh, two weeks later, on 20 April 1687, between Sir James Standsfield for himself and Robert Gordon; Alexander Hamilton, as assignee of James St. Clair, eldest son of the deceased James St. Clair of Roslin; and two London glassmakers, Philip Tyler and John Longe, 'latelie of Dublin in Ireland'.[118] The range of wares agreed on was rather less ambitious than that implied by Sir James Standsfield's earlier letter, but still included crystal. The partners agreed to pay 'the rates and pryces following viz:'

> ffor every hundreth of wyne and beere glasses and crewets accompting ane hundreth and ten for the hundreth[119] the soume of three shillings and six pence sterling per hundred the same being made of crystall or flint metall And for ilk ane hundreth of ordnair wyne and beer glasses to be made of the cullet or refuse of the cristall or flint two shillings sterling per hundred.

Bottles and 'other pieces of work' of crystal were to be paid 'proportionallie to the weight and value of the metall they shall be made of' at the same rate as the best wine and beer glasses, the same system was also to apply to bottles and other items made of the cullet. They were to be paid 1s 3d sterling for 100 mortars and 10d for 100 viols. They were also to produce 'all sorts of Apothecarie ware that is sold', at prices ranging from 6s sterling a gross to £10 sterling for 100, 'and so proportionallie'. Ordinary green bottles were to be made 21 to the dozen, but the price was left blank.

Philip Tyler and John Longe were to be paid three quarters of the money they had earned during the previous week each Saturday night, the remaining quarter to be paid at the end of each three months. The contract was for five years, with the option that the glassmakers could leave after three, provided they gave four months notice in writing. The owners agreed to keep the glassmakers in employment 'in the whyte glassworkhouse in North Leith the number of twenty working weeks yearly and ilk year'. If they were unable to keep the fire in for the full twenty weeks, they were to pay the men the same wages as they had earned while working. Sir James Standsfield and Alexander Hamilton could end the agreement after the first twenty weeks, provided they gave six weeks notice.

The glassmakers were to make at least 1,200 wine or beer glasses a week, or whatever else they were told, all to be 'as good and sufficient merchantable ware and alse good and fashionable in all respects as those who usually come down from London to this kingdom of Scotland.' They also agreed not to do anything which might harm the company; not to remove any materials or instruments; to deliver all the glass they made to the partners and not to sell any themselves; to take care of the pots and tools, and not to waste the metal. Any glasses which were not up to standard were to be remelted and remade for no payment.

The operation of the glasshouse for less than half the year was clearly considered sufficient, both for the needs of the market, and also in order to make a profit. On this

occasion, however, an interesting clause was inserted into the agreement, squeezed between two of the more usual paragraphs. Tyler and Longe agreed to work

> night and day so long as the fire burns each of them six houres by turnes. And during the space the said John Long is not workeing he obleiss him to make handles for swords and knives[120] and other com[?oddities] Als also all sorts of whyte and schappie work and delyver the same to his saids masters who are to pay him for his paynes in makeing thereof what they think fitt.

It is unclear whether this clause refers to the six hours between shifts, when John Longe was not working, or whether he was to make the handles and other items during the thirty-two weeks of the year when the fire was out. This would seem eminently reasonable, but raises questions about the materials in which he was to work, the response of guild members in Edinburgh, the range of his skills, and the definition of white and schappie work.[121]

A draft copy of a 'Petition for Sir James Standsfield & Alexander Hamilton anent the glasse house manufactorie in North Leith', dated 1687, and addressed to the lord high chancellor of Scotland, is in the Gordonstoun papers.[122] In it, they stated that the earlier partnership had spent 'upwards of 20000 Scots' to build two glasshouses in North Leith, the one 'for the whyte work ffor makeing all sorts and species of glasses', the other for green glass 'viz: window glass which was never attempted in Scotland before'. He then continued in *exactly* the same words as those used by Pape in 1663, accusing merchants of deliberately ruining them by not buying their products, and by importing glass from abroad. Their future plans were then described: they wanted to attempt to make glass for a fourth time, employing the men described above, to make 'all sorts and species in Christall, fflint as also for apothecaries and bottles (window glasses only excepted)'. The petitioners went on to request prohibition of all glass imports except for window glass; powers to appoint their own waiters and to confiscate any glass imported after June 1687; and that the glassworks should be given the status of manufactory for nineteen years, from 1 June 1687.

The range of products at the glassworks included bottles, as well as more refined items. On 26 August 1687 Alexander Ainslie wrote from Leith to Sir James Standsfield about various business matters, including the glassworks, and passed on the information that Alexander Hamilton, who would be away for several days, had requested that Standsfield would visit the glassworke in his absence.[123] He goes on to say that they were about to make bottles again for five or six weeks, using 'some old

broken stuff', and annealing them in 'ane arch in the great ffurnace'. They planned to make 1200 bottles a week, the only expenses being £2 sterling for coal and £3 16 0 for wages, the broken glass costing very little. The estimated profit, if the bottles were sold at 3s 4d a dozen, would be £11 0 1 2/3 sterling a week. However, Ainslie suggested a sale price of 3s a dozen, pointing out that that was the cost of English bottles in Edinburgh, and expressing confidence that he could sell them as fast as they were made at the lower price. The workmen were 'formerly' paid 12d for each 21 bottles, but 'Mr. Hamilton desires also that your Honr. would consider the workemens price for botles it being blank in the contract.' The contract described above was, indeed, blank at that point. Ainslie's letter, confirms, incidentally, that he was closely involved with the running of the glassworks, and at that time was probably managing it as part of his wider duties.

Three months after that letter, Sir James Standsfield met an untimely death, details of which are given in a summary of the subsequent trial of his elder son, Philip.[124] On 28 November 1687, Sir James' body was found in the River Tyne and was secretly buried by Philip, as that of a suicide. However, the Lord Advocate ordered an exhumation and autopsy, which showed that Sir James had been strangled, not drowned. When Philip was asked to help lift his father back into the coffin, fresh blood appeared on the linen swathing, a sign still regarded as proof of guilt in a murder. His subsequent trial for parricide and treason in the high court on 23 January 1688 was the last in Scotland to cite the ancient ordeal of *bahr-recht*.[125] There was also, however, a considerable body of more relevant evidence against Philip, whom the indictment called a 'profligate and debauched person', and who, despite his father's frequent financial help, had twice tried to shoot him. After much abuse, Sir James had, shortly before his death, taken steps to disinherit Philip, in favour of his brother John. Philip was found guilty, and, on 24 February 1688, he was hung, his tongue was cut out and burned, while his right hand was cut off and displayed at Haddington. The Newmills property was eventually sold to 'the notorious Colonel Francis Charteris', later chief creditor to William Morison of Prestongrange.[126]

On 9 August 1688, a new partnership was established, comprising George, Viscount Tarbat; John Watson, merchant; Andrew Powrie (Pourie) druggist; Alexander Ainslie, merchant; and John Dehen (Dehew, Dehine), glassmaker.[127] Presumably John Longe and Philip Tyler had gone to work elsewhere. The capital stock was £200 sterling, of which John Watson paid £75, Andrew Pourie £50, and the others £25 each.[128] The co-partnership agreement stipulated that there should be two shareholders meetings a

year, in October and April, with a £1 sterling fine for absence without good reason. It was also agreed that further capital might be required, in which case the partners were obliged to pay proportionally, within fourteen days of being informed, 'the soume for each tymes advance not exceeding £48 sterling'.[129]

On the same day, a contract was signed between the partners and one of their number, John Dehew the glassmaker,[130] who agreed to make 'all sorts of Green glass botles ... as also Chimisterie Ware and Vialls to the best of his skeill'.[131] Dehew also contracted to provide 'such workemen as he shall thinke convenient ... the finisher, blowers [?] taker in and gatherer being upon his owne Charges'. The unskilled staff were to be paid by the company. This is the only contract to have come to light, which specifically divides responsibility for the workforce in this way. Dehew was to be given a dwelling house and the cost of a fire in one room, and was to be paid for the glass he made every Saturday night. The list of prices due to him is interesting in that it shows the price difference for 'marked', or sealed, bottles, but it is somewhat confusing. It appears to read:

> for each dozen of half muskin botles plain 12d? to the doz.
> 1 1/2 ster. for muskines plain
> 2 1/2 muskins marked
> chopins plain 5d
> ditto marked 7d
> pynt botles plain 10d
> for ditto marked 12d
> [obscured] soe to double the prices as the size is doubled
> Item all retorts and receivers at the rate of plaine botles conforme to the size therof
> Item for each ?110 [?] of vialls what heirafter shall be agreid upon. As also for half muskine Rounds Chopines etc.

According to E. Dunbar Dunbar, the partners took a lease of 'the new Glassehouse in North Leith', on 23 August, 1688.[132] The Cromartie archives put the date as the 22 August, and says that the agreement was between the co-partners and Sir Robert Gordon of Gordonstoun, Alexander Hamilton, and the factor appointed by the Lords of Session to collect the rents of Sir James Standsfield's estate. The original tack appears to have been set on 2 February 1688, for the 'houses and pertinents and worke tools' for three years following the partners' entry at Martinmas that year. The site owners agreed to keep the glasshouse, dwelling house and other buildings

watertight, for which they were to receive £30 a year (sterling) rent, the first payment being on Whitsunday 1689. The rent was to be paid retrospectively every six months. At the end of the three years, the co-partnership had the option to renew the tack for seven years, on the same terms, or to terminate the agreement, giving forty days notice of their intention.[133]

Dunbar also published "A Noate how the profite appears weekly, upon the makeing of Botles," in connection with the new partnership. The author assumed a production rate of 2,880 bottles a week, using four pots in the furnace, 'each pott to containe 120 chapine botles, which makes 480 to ane furnay, and to have 6 furnayes per weeke'. The selling price was to be 3d each. The detailed costing (in sterling) is of interest:

For the metle of 2880 peice of chapine botles	£03 00 00
To Coalls	03 00 00
To Workmen for makeing 2880 peice of botles, at a half penny per peice,	06 00 00
To 2 Sizars, [?teasers] each at five shillings,	00 10 00
To Pounders of metle,	00 10 00
To Iron and mending of worke-toulls,	00 10 00
To ane man to worke about the house for carring of botles, and pounding of clay, &c.,	00 04 00
To ane to make potts,	00 10 00
To ane Founder,	00 10 00
To ane Clarke,	00 10 00
To House-rent,	00 10 00
To Pott-drink,	00 01 00
To Candle, and for Stro for pakeing glass,	00 01 00
Charges,	16 01 00
The weekly profite is,	19 19 00
	£36 00 00[134]

This costing, like others in this thesis, seems very optimistic. No allowance is made for play-wages during the weeks when the fire had to be extinguished for mending the furnaces, with the consequent loss of production. Although repairs to tools were included in the estimate, the much greater cost of furnace repairs was not, nor was any allowance made for breakages.

Alexander Ainslie in his letter of August 1687, discussed above, mentioned the former payment to the workmen of 12d for 21 bottles, so it appears that the rate was to be cut, as Alexander Hamilton had suggested, and by the considerable amount of 1 1/2d for 21 bottles. If the intention was to have four pots, presumably they would have been worked by two teams of blower and finisher, the payment being shared between them. It is interesting to note that the pot-maker, the founder, who was responsible for mixing the metal, and the glass-house clerk were all to receive the same pay.

Ainslie (1661-1720), who was subsequently associated with the glassworks for many years, was, of course, already well acquainted with its operation. He had been apprenticed to Sir James Standsfield in 1683, and had then worked as his servitor. Although only twenty-six at the time of Standsfield's death, he was obviously a capable man, whose 'care and diligence' persuaded a London merchant to appoint him his factor in 1688.[135] A general discharge by Ainslie of all the money he had spent on behalf of Sir James Standsfield, signed in 1692, confirms that he had been a significant employee.[136] He married in 1693,[137] his wife, Elizabeth Gray, being the daughter of Sir William Gray of Pittendrum.[138] In 1694 he became burgess and guild brother of Edinburgh by right of his apprenticeship to Standsfield.[139]

George Mackenzie, Viscount Tarbat, later the first Earl of Cromartie (1632-1714), is described by Monica Clough as 'one of Scotland's leading magnates and politicians, under James II and VII, William and Mary, and Anne, he energetically promoted a number of infant industries through enabling legislation, and by private investment'. He had interests in a paperworks and a linen manufactory, as well as the glassworks.[140] The Cromartie papers contain several items relating to the glassworks and his involvement in it, used by Clough as the basis of her article. He had actually been acquainted with the glasshouse some ten years before becoming a co-partner: a diary entry for 7 January 1679 records that, at Leith, 'I saw at the Glass work antimony to whyte glass,' and he also mentions barilla being used there.[141]

Andrew Pourie, druggist (d. before 1702), was made a burgess and guild brother of Edinburgh in 1684, by right of his wife Elizabeth, daughter of Robert Smyth of Southfield.[142] He was co-partner in a tobacco company with James Balfour, his brother-in-law, and later owner of the glassworks.[143] John Watson, merchant, was also involved with other manufactories, as co-partner in a large gunpowder company[144] and a partner of Sir James Standsfield in a brewery in Leith.[145]

John Dehew (Dehine, Dehen) younger, came from Newcastle and his brother, Isaac, was also a glassmaker in Leith.[146] He was married to Elizabeth Barton, by whom he had six children, three of whom were registered in North Leith, in 1690, 1691 and 1693. He died before 7 October 1700.[147]

On 3 October 1689, Watson, Pourie, Dehew and Ainslie,[148] applied to the privy council of Scotland for grant of the status of a manufactory, and the prohibition of the importation of green glass bottles and vials.[149] The basis of their petition was a familiar one: they had produced

> with so great perfectione and success as to the making of green glass botles, chimistrie and apothecarie glasses, that they have alreadie made upwards of tuo thousand duzone of green glass botles and the samen both alse good and at als low rates as any that can be had from London or Newcastle ... and they are in a position not only to serve the country with these but to make 'a greater quantitie in the space of four moneths then wes ever vended in the natione during the space of tuelve moneths.

The petitioners went on to claim that the masters of the glassworks in Newcastle, having 'formerly ruined the Glass Work at Leith by seducing the principal servants[150] ... so now presentlie ... have attempted to brybe and seduce one of our principall servants by offering him a considerable soume to desert the work', their remedy being the ban on imports and the grant of manufactory status. Presumably, such an appeal was likely to meet with a sympathetic response, as indeed it did, but it reflected the usual problem - a Scottish market too small to absorb production, and the difficulty of recruiting and keeping skilled workmen. In fact, of course, the Scottish glassmakers sought out *their* skilled workforce from other glassworks, and the problem of losing workers to rival glasshouses was of equal concern to the Newcastle masters (the Dehews being known to have come from there in the first place). It also seems quite possible that the problems were exaggerated in order to gain the very valuable concessions of freedom from taxes and the other advantages accrueing to a manufactory under the Acts of 1661 and 1681, in addition to the market monopoly. The petition stated that the co-partners had taken a ten-year tack of the glasshouse and had been making glass for the previous three months.

An act was duly passed on 3 October 1689, the terms of which were published in Edinburgh, as a 'Proclamation in favours of the Glass-Manufactory in Leith', on 8 October 1689.[151] The glassworks was declared to be a manufactory, and the

company was granted all the priviledges inherent in that status, provided they sold the chopin bottles at half a crown a dozen, sixpence a dozen less than the sale price on which the initial costings were based in 1687. Imports of bottles, chemistry and apothecary glasses were banned, unless they had been ordered before 3 October, and were delivered before 1 December.

A further petition was presented to the privy council on 28 June 1690, which set out some of the difficulties said to have been experienced by the new partnership.[152] It stated that, after twelve months trial, they found 'their losses excessive in respect of sea hazard'. They had to import all their materials from London, which was very expensive, particularly because of the effect of the war with France, and they made a loss if they had to sell chopin bottles at 2s 6d a dozen. They therefore asked permission to raise the price to the same level as the Newcastle bottles - 3s sterling a dozen. They also alleged that 'many circumvent the act by bringing home bottles purposely filled with some liquor or other that they may pass'. They were given permission to raise the price during the war, and a ban was imposed on bottles containing anything other than wine or drugs.

The glasshouse itself, and other buildings, appear to have been in poor condition. A balance sheet, still among Sir Robert Gordon's papers, includes an entry for October 1689 for payment to wright Francis Thomson for 'viewing the Glasshouse it seeming to fall'.[153] Although some work was done in 1689, Ainslie and his partners had to resort to the courts to force the owners to repair the buildings.[154] Entries for deals, nails, lime and tiles show that some building work was undertaken in 1689 and 1690, including expenditure on 3 chists and 48 feet of window glass. In May 1691, Francis Thomson visited twice about an estimate for a new roof for the glasshouse, following which major repairs to the buildings, costing £420 Scots, were carried out. A contract between Francis Thomson, wright of North Leith, and the three owners, Sir Robert Gordon, Alexander Hamilton and Sir James Standsfield's executors, gives some idea of the size of the 'great lodging'.[155] The tenement building was to be re-roofed with timber and tiles, the chimneys at the east and west ends of the building were to be raised, and the wooden winding stair and door at the north corner of the house repaired. Two sheds[156] were to be built 'for the tuo saller doors heads next the key', and the shed over the door to the back cellar was to be mended. Plaster on the upper stories was to be repaired and Thomson was to 'pinn and harle the tuo midle rownds [?turrets] and to help the Easter Timber Rownd soe farr as is needfull'. His bill was paid on 2 December 1691.

Just over a year later, the three owners went on to make repairs and alterations to the quay. George Rankine, mason in Leith, agreed to

> take down the easter and wester ends of that part of the north peir of Leith belonging to the glasswoork and opposit thereunto To the foundation from the front of the said woork and inward and againe to build up the same in good sufficient [?] woorke as it was formerly and to put in wall stones where formerly they were and to recounter or turn the Cunires [?corners] seven foots towards the front of each end and to lavell the wholl front of the said peir turning the same six or seven foot inward...[157]

Rankine agreed to complete the project by Whitsunday, at a charge of £150 Scots.

On 28 April 1693, Alexander Hamilton, who had bought James St. Clair of Roslin's share in the glassworks and his one-third share of the site and permanent buildings in 1686, sold the site to Sir Robert Gordon of Gordonstoun for £1,000 scots.[158] Gordon already owned one-third and on 29 December 1693, he became the sole owner, when he paid another £1,000 Scots to Hew Dalrymple for the remaining third. Dalrymple had obtained a decreet of adjudication on 2 January 1692 against John Standsfield, 'only lawful son' of the deceased Sir James Standsfield for the one-third of the property which had belonged to him. So by the end of 1693, Sir Robert Gordon of Gordonstoun owned the whole site in North Leith 'now containing ane tenement of land bigged theron with ane yeard at the back of the north part of the samen in which is now bigged two timber houses for the glasse works ...'[159] The glassworks company continued to lease the glasshouse, tenement and glass tools from Gordon for £30 sterling a year.[160]

At the end of 1697 the condition of the glasshouses themselves was again causing concern. Alexander Ainslie, having paid the half-yearly rent, wrote an understandably anxious letter to Sir Robert Gordon, requesting urgent repairs to the wester glasshouse, which he described as being in a 'very dangerous conditione some of the roof being failled soe that their was no high weind but wee all thought that it should fall which would be dangerous the ffire being in'.[161] He had employed a wright to make the most urgent repairs, and had a slater pointing 'the house', which was essential 'ffor if it be not keeped water tight it would soon decay being all wood'. It seems reasonable to assume that Ainslie was, once more, using both the glass furnaces

on the site. A wooden hovel surrounding the furnace was a common feature of seventeenth-century glasshouses, and one with obvious hazards.

Five and a half years after becoming sole owner, on 10 June 1699, Sir Robert Gordon of Gordonstoun sold the property (which was separate from the glassmaking business) to James Balfour, merchant in Edinburgh, and Alexander Ainslie, for 4,000 merks Scots. Balfour bought five-eighths, Ainslie three-eighths, of 'the dwelling houses high and laigh under and above with the office houses and pertinents thereof with the yeard and new build glasshouses thereon...[162] and also that pairt and portion of the pyre and shoar belonging thereto.' They agreed to hold the property 'in free blench ferme' for one penny Scots a year. They were granted the right to 'the haill instruments tewells and other materialls belonging to the said glasswork' except for two iron kettles, which were for Gordon's own use. If they should decide to quit the site, Balfour and Ainslie agreed to pay 1,000 merks to Gordon.[163]

The glassworks appears to have operated continuously throughout the period from 1688. Evidence for production includes receipts for glass from Leith, addressed to Alexander Ainslie in 1694, in the Breadalbane papers and others among the Tarbat household receipts.[164] A hearth tax payment of £10 was made by Alexander Ainslie 'clerk to the glass manufactory' in 1695, for his family and the four servants in his household, at least one of whom, Robert Glasgow, was a glassmaker.[165] A partnership agreement describes Alexander Ainslie as 'clerk to the glasswork at Leith' in 1696,[166] and payment of a debt of £10 14 8 sterling 'for good and sufficient bottles' was agreed by Ainslie in 1699.[167] John Dehine's price list had included 'marked' bottles, and there is a letter in the Cromartie papers ordering some: one of Lord Tarbat's secretaries wrote to Ainslie in 1695, asking him for twenty dozen chopin and 10 dozen muchkin bottles, and that they should 'be marked gif it is all [possible?]'.[168]

From 1700 occupations were recorded in the North Leith parish register of births and marriages, providing the names of some of the glassworkers, a complete list of whom is given in appendix 2, and, therefore, some indication of the stability of the workforce. George Kemp, for example, described in the OPR of January 1700 as 'Anglus, Vitri conflator', had the births of five children recorded there, between September 1698 and January 1707. Isaac Dehew married Agnes Ewan, daughter to the late Alexander Ewan, sometime merchant in Stirling, in October 1700, and witnessed a christening in August 1717.

There were changes in the ownership of the business, however, during this period. On 8 June 1699, a further one-eighth share in the glassworks was transferred from Sir Robert Gordon to James Balfour.[169] On 21 October 1699 James Balfour assigned to his son, also James, all his various business interests, including:

> all and haill that my fyve 1st eight parts of the propertie of the glaseworke at Leith ... together with thrie eight parts and thrie sevens of ane eight part of the haill stock debts and all made glasse and others belonging to the sd manufactorie and copartnershipe togeither with all contracts of copartnershipe and haill materialls and instruments belonging thereto...

He also assigned the yard next to the glassworks, which he had 'latlie purchased', together with the oak timber in it.[170]

It would be appropriate, at this point, to record something of the Balfours, who were of considerable importance in the mercantile circles of Scotland at the end of the seventeenth century. James Balfour senior is best known as one of the two men described by George Pratt Insh as being 'the founders of the Company of Scotland'.[171] Insh had earlier published papers, in the possession of the Balfour family, showing the 'depursements be Mr. Robert Blackwood and Ja. Balfour for promoving ane Act of parlement for careing one a tread to Africa and the Indes', between 1693 and 1695.[172] Balfour and Blackwood were very active in promoting the company, each of them subscribing £500 sterling in 1695 and are named by Insh as having lent considerable sums to the company while the expedition equipment was being prepared in 1698. A complete list of the original subscribers is given in appendix 1.

James Balfour is described by Insh as a man 'who knew intimately the small scale on which struggling Scottish industries were being conducted'[173] He had reason to be conversant with Scottish industry, since he was closely involved with several, besides the glassworks. Among the interests transferred to his son James in 1699 were a half share of a 'manufactorie and soap work at Leith', which he owned with Adolphus Durham, merchant there. He also had share in an alum works, an interest in processing tobacco, he owned a shipyard, and appears to have lent money, to judge by the number of debtors listed.[174] James Balfour had been made burgess and guild brother of Edinburgh in 1685, by right of his wife Helen, daughter of Robert Smyth of Southfield, and sister to Elizabeth, wife of Andrew Pourie, druggist, and Balfour's partner in the glassworks and the tobacco business.[175] Balfour senior died in 1702 or

1703, in his mid-fifties.[176] James Balfour younger (1681-1737), continued to develop the family business interests. By 1706 he was treasurer of the Gun Powder Company, which had been established at Canonmills in 1696, having four shares, while eighteen of the twenty-one directors owned only one each,[177] and he became a director of the Bank of Scotland in 1726.[178] He bought the estate of Pilrig in 1718, using compensation for the losses sustained by shareholders in the Darien disaster, paid by the government.[179] At least two of Balfour younger's thirteen surviving children married people with connections in glass manufacturing: in 1732, Helen married Gavin Hamilton, publisher and bookseller, one of the co-partners in the abortive attempt to set up a glassworks at Wemyss; in 1747, Margaret married James Russell, chirurgeon apothecary, son of Francis Russell apothecary, a partner in the Morison's Haven glassworks.

It is interesting to examine briefly the range of companies in which these late seventeenth-century merchants invested, for they were often complementary to each other. Alexander Ainslie, for example, was half partner in a cork cutting business, which he set up with Robert Swinton, corkcutter, in October 1696. He put up capital of £100 sterling to purchase cork, and agreed not to buy any from elsewhere during the six years of their agreement. Robert Swinton agreed only to work for, and sell to, Ainslie, and to travel anywhere in the country, on Ainslie's orders, both to buy the raw material and to sell the cut corks. He was to make 'good and sufficient corks for bottles' for no more than two shillings Scots per gross.[180] The logic of Ainslie's investment is obvious, and is exemplified by a bill of lading in the Cromartie papers. The master of the *Elizabeth of Leith* received, in October 1698, 'Ffour hampers containing one gross muskine, two gross chapine bottles, six pynt botles, ffour chirnes of glass and six gr. of corks ... for the use of the Viscount of Tarbet'.[181]

James Balfour's 'portfolio' of shares was also more integrated than may at first appear. Potash was required in the manufacture of soap and alum, as well as glass, while soaper's ashes, the residue from soap production, was used in making bottle glass. Another, earlier, example of complementary investments is the shipping to Lisbon by Sir James Standfield in 1674 of among other things, five chests of glasses of assorted sizes, to the value of £682 10 Scots.[182]

Although Alexander Ainslie and his partners had obtained the status of a manufactory in 1689, they appear to have experienced problems persuading the Edinburgh council to grant them the privileges to which they considered themselves due. An 'Act anent

the Manager of the Glasswork at Leith', recorded in the town council minutes in November 1695, set out Ainslie's case, which included the allegation that, despite the glasswork having been declared a manufactory and therefore entitled to 'enjoy the Liberties, Privileges, and immunitie' granted to them, the town's tacksmen had tried to charge shore dues on imported raw materials, contrary to the 1681 Act.[183] Ainslie went on to assert that it was also in the interest of the town of Leith to support the glassworks, since it gave employment to 'many poor families who other ways would be necessitat to be burdensome to the publick'.

He also made the not unreasonable claim that the glassworks should, in any case, be immune from shore dues, because they actually owned the quay at which all the raw materials and finished goods were loaded and unloaded. Since the petitioners had themselves built the pier, and had spent £400 Scots on repairs in the current year 'so that the Key being their owne property maintained and repaired by them for the beautifying of the harbour as well as their owne conveniency, no imposition could be exacted in Law or conscience from them'. Despite the apparent logic of this argument, and the fact that the glassworks had always previously been exempt from shore dues, the petition was refused by the council.

An additional problem for the owners of the Leith glassworks came three years later, when, in 1698, permission was granted for the erection of glassworks at Morison's Haven and Wemyss, which will be discussed in chapters eight and nine. In 1700 came yet another petition, that of James Montgomery, requesting permision from the Scottish parliament to establish a glassworks in Glasgow. In response, Viscount Tarbat wrote, in 1700, 'A Memorandum for the partners of the glasse work of Leith', which is still in the Cromartie papers. In it, he expressed concern about applications to set up rival glassworks and suggested steps which could be taken to limit the damage to the Leith works.[184] He pointed out that the proprietors of the Morison's Haven works had not 'performed in the termes of their act', and suggested that, since

> several others are now applying for erecting of manufactorys in other places of the kingdom, if it will not be fitt ... for the pairtners of Leith Manufactory to aply [to] the parliament for ane liberty to make all sorts of glasses allowed to manufactorys already established And because the establishing of any more then what are already erected will be great discouragement to the first adventurers who have been at great trouble and expense to bring their workes to perfectione - to refuse all aplicatione for erecting of new manufactories ... seeing they

> can doe more than furnish the whole natione And that for the space of [blank] years without which the whole glasse-works will be ruined.

He went on to suggest that they should apply for prohibition of imports of 'such goods as are wrought in the Leith manufactory'; confiscation of banned imported goods; the right to appoint their own waiters; and that appropriate officials should be obliged to assist with seizing prohibited goods.

Whether or not that particular petition was submitted, in March 1701 the privy council again declared the Leith glasswork to be a manufactory, and reaffirmed the prohibition of imports of 'any green glass bottles, chymistry and apothecary glasses under pain of confiscation'. The declaration was in response to a particular violation, the culprits this time being not the Scottish merchants, but the tacksmen and collectors of the customs, who 'by connivance' had allowed a large number of bottles to be imported at Montrose. The bottles had been sent by 'the masters of the glass manufactories in England, thereupon of purpose to break the petitioners trade ... and to undersell, to the ruine of their manufactory, resolving, if once they can constrain the petitioner to give over, not only to have the trade, but what price they please.'[185] The petitioners claimed to have 'upon their hands no less than a Thousand Pound Sterling worth of made bottles, and their work actually going', and asked that stringent measures should be taken to ensure that the prohibition was legally enforced. The privy council forbade the entry of any empty bottles whatsoever, and permitted the partners of the glassworks, or their agents, to search for and seize any that were illegally imported.

The glassworks was clearly struggling at this time, and continued to do so. In December 1702, Ainslie produced a 'List of Debts with the value of the accompts of Glass in Costodie and money and materialls belonging to the glasswork for the stock of the Copartinarie accompt att Leith'.[186] He specified, on each page, that the currency was sterling, so there is no doubt that it was, although Monica Clough suggests that 'the sums converted into the more usual merks or £Scots seem suspiciously large'.[187] The stock of bottles, at that point, stood at £333 16 1 2/3, and Ainslie had over £60 in cash. There are 152 debtors in Ainslie's list, ranging from the Duke of Hamilton to Patrick Chalmers, beltmaker. Money was owed from people in Aberdeen, Perth, Glasgow, Dundee, Buckie, Portshoy, Findhorn, Kirkwall, Banff, Haddington, Airth, and Cromartie, as well as many closer to hand. Lord Elcho owed £61 16 3, a sizeable sum, perhaps connected to his own abortive attempt to set up a

glassworks at the turn of the century. The large amount of £105 2 2 was owed by Thomas Harwood in Dertford.[188] As well as private customers, there were numerous merchants and vintners, and some apothecaries, owing amounts ranging from 16s 16d to £37 12 0. The list ended:

Glasswork for materials	87 16 5 5/6
George Kemp Glassmaker	8 0 0
Isaack Dehine Glassmaker	7 7 2 1/2
Robert Liptrap Glassmaker	1 14 9

The total notional assets amounted to £1,495 16 9 1/6 sterling. The shares are actually divided into sevenths, not eights, in Ainslie's account. James Balfour still owned most of the property but, at that point, seems to have only had a one-seventh share in the company, which he had bought from John Watson. The new name on the list, Robert Blackwood, was, of course, the co-founder of the Company of Scotland with James Balfour. The division of assets was as follows:

Viscount of Tarbat... 1/7		£25
Mr. Robt. Blackwood...2/7		£50
James Balfour for Andrew Pourie..2/7	£50}	
Do. Balfour his account...purchased		£75
of John Watson...1/7	£25}	
Alexdr. Ainslie...1/7		£25

The glassworks continued to operate despite the difficulties and the competition, which had been increased by the establishment of a glassworks on the west coast, at Glasgow, and despite the economic turmoil in the aftermath of the Darien disaster. On 18 May 1705, the owners of the glassworks again petitioned Edinburgh burgh council for exemption from shore dues,[189] having been in dispute with them for several years. One problem frequently experienced by businesses was obtaining payment for the goods supplied, a point illustrated by a bond in the register of deeds. John Anderson, sheriff clerk depute of Aberdeen owed the partners of the Leith glassworks £259 Scots 'for good and sufficient bottles *and other glassware*' (my italics) in May 1705, which he agreed to pay after Martinmas.[190] Such a large amount of cash outstanding was bound to exacerbate any cash flow problems.

In the normal course of events, it was inevitable that the glassworks fire had to be extinguished from time to time,[191] although earlier references to large stocks at Leith

imply that they would have had little difficulty in keeping up supplies of bottles. For whatever reason, however, it was considered necessary to advertise in August 1706, 'that Glass-bottles, and other sorts of Glasses are made (as good as ever was) at the Glass Manufactory in North Leith; where all Persons may be served with what Quantity soever they want, as formerly',[192] a statement which suggests some considerable lapse in production and perhaps other changes. This is borne out by the account of goods imported duty free for the use of manufactories in 1706, contained in the treasury warrants. These show that 1,436 bushels of wood ashes and 1,536 bushels of 'ashes clay' were imported from London for the North Leith glassworks, representing a 'computed Duty' totalling £9 10 0 for customs. The equivalent imports for the Morison's Haven glassworks were given a computed duty of £36 3 4.[193] This discrepancy may, of course, simply be due to Leith already owning large reserves of raw materials, but that seems unlikely to account for such a big difference over a year.

By 1708, the proprietors of the glassworks were George, now Earl, of Cromartie, James Balfour younger, James Blackwood and Alexander Ainslie, and there is evidence to show that the business had been experiencing severe difficulties for the previous two years. This is hardly surprising, of course, because the Act of Union of 1707 had removed the valuable ban on imports of bottles, while the exemptions from duty and other privileges, which had been granted to manufactories by the acts of the Scottish parliament in 1661 and 1681, were also under threat.[194]

Specific evidence of their difficulties is contained in written 'Observes on Alexander Ainslie's Accompts' and his answers of 6 May 1708.[195] His accounts had obviously been critically received by his partners, who were attempting to obtain some redress from Ainslie. The first point made by the partners is that 'Seeing there hes been a great loss on the work these tuo years', Ainslie's salary should be reduced to the £40 a year he was formerly paid. Ainslie pointed out that 'in management of all Manufactories the trouble is greater when the profit is least - especially in Glassworks', claiming that the principal servants were 'under such indispositione as obleidged the Clerk almost wholly to that servants duety And he is founded in ane express act of sederunt which cannot be restricted'.

The proprietors then went on to propose that Ainslie should not be paid at all 'since the fire went out and till the work begin again'. His reply was succinct:

> Since Alexander Ainslie when the fyre is out Is still at trouble and expence in the accompts of goods sold, brocken Glass bought for the company, persewing of Debts, provydeing Materialls at home and from abroad for the goeing of the work and seeking and secureing of servants, he presumes there can be alse litle ground for quarreling of this Article as the former...

He also quoted the employment contract, which set his salary and duties, arguing that his pay could not be reduced until he 'be discharged of his service'.

The third charge against him was that the price paid for coal during the previous two years was higher than if it had been 'providently bought', and that it should not cost above £4 Scots. Ainslie replied 'that every Coall is not propper for the work' and that he 'charges noe more then what he sold them for to others', which implies that he had been acting as middle-man in the purchase and sale of the coal. He went on to say that, as a partner in the business, he would 'think himself a gainer' if the company could find suitable coals at a cheaper price. The remaining points of disagreement are less clear cut, but in the same vein. Ainslie added a rider to his reply, on 18 May 1708, that

> The Companies concerns at this Juncture requires speedy dispatch in provydeing servants and other necessaries for the work, and therefor there would be noe delay in the Consideration of the Companies observes of Alexander Ainslie's accompts and his answers thereto, that due measures may be followed for their publict intrest.

Monica Clough ends her discussion of these Cromartie papers with the question 'Did Alex Ainslie ever get his fire relit?'[196] The answer to her question is 'Yes, he did', and he continued to run the Leith glassworks until 1714.

The following year, 1709, Ainslie was summoned before the Admiralty Court to answer the charge that he owed Thomas Oswald, skipper of Kirkcaldy, £25 sterling for the freight of 2,115 bushels of ashes and nine casks of clay from London to Leith.[197] Ainslie claimed that the goods had been so damaged by sea water in transit, as to be virtually unusable. He had taken the precaution of going personally to the ship, accompanied by a notary and witnesses, to see 'that the samen were intirely damnified and spoilt'. The water bailie at Leith had also been called in to arbitrate in the case at the time. Oswald's claim was based, not on denial of the damage, but that it had been caused by a severe storm off Alnmouth, which had not only damaged the

cargo, but had put the ship and crew 'in extreme hazard of their lives', and that in all bills of lading such hazard 'is excepted' (and presumably covered by insurance). The judgement went against Ainslie and his partners.

An interesting advertisement appeared in the *Edinburgh Courant* in 1710, indicative of the competition between the rival glassworks. Since it gives prices, it will be reproduced in full:

> These are to advertise that the Glass Bottles, made in the Glasswork in North Leith, are sold there at the Rates following viz. Plain Mutchkine Bottles at Eighteen Shillings per Dozen, plain Chopine Bottles at Twenty Six shillings Scots per Duzon, and all other sorts of Bottles at Reasonable Rates. Whoever pleases may have from the Clerk of the said Glasswork, a Testificat which will prevent the Buyers being imposed upon by getting other bottles, under the Name of Leith Bottles.[198]

The same edition also carried an advertisement from a James Guthrie in Leith, who was selling 'all sorts of good and sufficient Glass Bottles Cheaper than anywhere else in North Britain, and good Encouragement to those that buy a quantity to sell again.' His stock may well have been imported from Newcastle or elsewhere, and may be the reason for Ainslie's advertisement - the early exploitation of a brand name!

In 1712, however, the glassworks was put up for sale. An advertisement in the *Scots Courant* on 12-14 May, stated that anyone interested in buying or leasing it should speak to James Balfour at his lodgings in Leith, or Alexander Ainslie at the glassworks. Added inducements were a considerable stock of broken glass, 'a good number of excellent Clay Pots, and the Furnaces and Arches in Readiness for Use, with all Sorts of Work Tools for making of Window Glass, likewise to be sold.' Bottles were also available 'as formerly'.[199] This foray into window glass making is somewhat surprising, and may indicate that diversification was seen as essential to maintaining viable sales, in an increasingly competitive market. The fire was certainly out at that time, but the advertisement was repeated only twice, an unusually short run for one seeking a buyer or lessee.

Entries in the North Leith OPR show that glassmakers continued to operate in Leith: Isaac Dehew and his wife had a daughter in 1711 and another in 1716. New names appeared: Lewis Brownhill in 1707, James Brash and William Smith in 1717, and ownership of the glassworks itself changed. On 6 October 1714 James Balfour,

younger, and Alexander Ainslie sold the 'dwelling house with the office houses ... the yard and Glasshouse built thereon ... with the part of the peer and shoar belonging thereto' to James Nimmo, merchant in Edinburgh.[200] Only six months later, on 4 March 1715, James Nimmo sold it again - to Robert Wightman, merchant in Edinburgh and James Balfour of Pilrig,[201] who were to remain joint owners until 1725. It is quite possible, however, that only the site and buildings were transferred to Nimmo, and that the business was run separately, as it had been earlier.

Robert Wightman's name does not appear in the list of Edinburgh burgesses, but he was clearly a man of some wealth and influence. In 1718 the city of Edinburgh cancelled a bond borrowing £550 sterling from him, describing him as a merchant 'and the present Treasurer of Edinburgh'.[202] He was also involved in overseas trade. In 1722, for example, Robert Wightman & Company, merchants in Edinburgh, chartered the *Thistle* of Leith, to take herrings to Stockholm, pick up iron and take it to London or Newcastle, James Balfour being a witness to the charter party.[203] Wightman's testament, following his death in 1747, shows that in 1744, he also owned the lease of part of the lead mines at Wanlochhead.[204] Another of the part-owners of the *Thistle* in 1724, was Alexander Johnston, then clerk at the glassworks, who had a one-eighth share assigned to him for non-payment of a debt.[205]

A useful description of the glassworks under the management of Wightman and Balfour was recorded by the first industrial spy from Sweden to visit Scotland, Henry Kalmeter, who wrote in some detail about the various industries he visited around the Forth in 1719-20, including those at Leith:

> In the town is to see the custom house, the storehouses of deals, iron etc. and the glassworck belonging to Mr Weigtman and Befour, where they only make bottels, which are reckoned very good and strong, and are there sold for 20 pence a dozin. They take thereto 3/4 parts of woodashes, them they buy from London, 1/4 of the refusals of the ashes of soap-making, and as much sand as the ashes may require. The 'seawear' (a kind of wrack or big reed thrown up by the sea) burnt, till it comes to a very hard body, and broken glass of bottels, is likewise mixed with it. This is all warmed in a furnace before they put it in the pots, where it is smelted about 10 or 12 hours before they begin to draw the glass.[206]

Coal for the Leith glass furnaces was regularly shipped from the Halkett of Pitfirrane colliery through the port at Limekilns. In the estate manuscripts there are records of shipments, listed under 'Coals exported within the kingdom', in 1723, (to the value of

£224 14 0 sterling), 1724, 1725, 1726, 1729 and 1730. In addition to Leith, the Pitfirrane coal was supplied to the Kirkcaldy, Port Seton and Morison's Haven glassworks during this period.[207]

Between 1725 and 1733, ownership of the Leith glassworks was shuffled between Robert Wightman and James Balfour of Pilrig, in a manner difficult to understand without more information but, again, the property may have been bought and sold separately from the glass-making business. In May 1725, James Balfour became sole owner, when Robert Wightman transferred his half of the property to him.[208]

In 1731, a lengthy instrument of sasine was registered in Edinburgh by lawyers for James Balfour of Pilrig. Dated 30 October, it lists all the earlier dispositions and sasines relating to the glassworks site in North Leith, back to 1695.[209] It may have been considered advisable to consolidate all the previous changes of ownship in the one legal document, particularly as many of the earlier changes were in the form of dispositions recorded in the register of deeds, rather than actual instruments of sasine. Be that as it may, some fifteen months later, on 17 March 1733, Robert Wightman again became the owner, when all the writs relating to the glassworks, going back to the initial charter from Edinburgh burgh council to Sir James Standsfield in 1673, were handed over to him.[210]

In 1728, Balfour had finally obtained a charter for the glasshouse from the Edinburgh burgh council. The council had requested public right of access to an island, belonging to Balfour, in the Water of Leith, near Bonnington mills. He agreed, but asked for the charter in return, which was duly granted on 4 September 1728.[211]

It is possible that the glassworks was not operational for several years during the 1730s. The register of shore dues at Leith lists regular imports of coal for the glassworks in 1726 and 1727, ashes from London in 1728, coal and kelp in 1729, and coal in 1730, when, in September, Robert Wightman received 14 tons.[212] There is, however, no mention of the glassworks between 1731 and 1738. During the same period, there was a large increase in the entries of glass imported from Newcastle. In 1736, for example, dues were paid on 29,081 dozen bottles (plus more for which numbers were not given), 105 chest of window glass, and 210 barrels, 34 packs and 2 casks of unspecified glass.

The North Leith site changed hands yet again in 1738, when it was bought by John Sime (Syme, Sim). In a sasine registered on 18 February 1738, Robert Wightman sold to him: 'the dwelling house high and laigh ... the office house...with the yeard and Glass house built thereon...'[213] This sasine raises some interesting questions about John Sime. He is described by Sue Mowat as one of the ship carpenters of Leith, who, having married the widow of a leading ship-builder, shortly after his death in 1733, took over his yard and began to pay Gold Penny.[214] Sime gradually bought up plots of land adjacent to the glassworks site, and his son eventually built the first dry dock in Leith, on the adjoining site. According to Mowat, he was 'apprenticed in Leith at some time around 1720'.[215] However, a John Sym worked as clerk to the Morison's Haven glassworks from at least 1718 to 1722, and featured regularly in the factor's account book for William Morison of Prestongrange.[216] He was paid for overseeing the delivery of ashes from Leith, 'for waiting upon ye potts in the glasswork & keeping in the fire under them' and for paying the wages of the servants at the glassworks, and was himself paid £1 10 a week for his services. The man who preceded him at the glassworks was 'Rd. Wightman'. Clearly John Sime knew a great deal about running a glassworks, and it appears likely that, having married well in 1733, he intended to put his knowledge to good use when he bought the glassworks in 1738. It must surely be the same man. Robert, as well as Richard, Wightman appears in the same account book, further strengthening the connection.

It is unclear whether John Sime operated the glassworks between 1738 and 1746, since no evidence relating to that period has come to light, but in 1746 several meetings were held with a view to setting up a new multiple co-partnership to fund and run the glassworks at Leith. An initial agreement was reached on 7 August and, on 11 and 23 September, a formal contract was signed by the twenty-three co-partners, all of whom were merchants in either Edinburgh or Leith, or wine coopers in Leith.[217] A merchant whose name had appeared regularly in the register of shore dues, George Miln, became one of the leading shareholders. He frequently bought bottles from Newcastle, and appears to have been a wholesaler. Between May and September 1735, for example, Edward Burd, a wine merchant in Leith, paid £47 15 9 (no doubt sterling) to George Miln for 467 dozen bottles.[218]

The partnership agreement, which was signed on each of the eight pages by all the partners, is much more sophisticated than the earlier agreements discussed in this thesis. The objectives of the new company, the responsibilities of the partners, their voting rights, contingency plans in the event of the death of a partner, arbitration

procedures, and other contractual obligations, are clearly spelled out; the whole document is business-like and unambiguous.

The company was divided into fifteen shares of £150 sterling each, providing capital of £2,250, seven of the shares having joint owners, while brothers George and James Miln owned two, as did Thomas Summers (Sommers, Somers), the glassmaker who was to provide the essential expertise, already owner of shares in the Glasgow bottleworks. Their objective was the production of glass bottles, for which the partners, during the first year, were to provide capital on demand 'for fitting up houses Purchasing Materials or otherways for Manufacturing and makeing the said Glass bottles'. If, at the end of the year, the venture was deemed to be viable, the partners were bound to the contract for a further nine years. Three of the partners were to be nominated managers, one of whom would go at the end of three months, to be replaced by another, and so on, creating a rolling programme. The first three managers nominated were Hugh Clerk, Thomas Hyde and John Jamieson, a timber merchant.[219] A clerk and cashier were to be appointed at the first general meeting after the contract was signed. All 'Regulations Orders and Appointments' were to be decided by a majority vote, every full share having only one vote, regardless of the number of owners. Although Thomas Summers, the glassmaker, and the Milns brothers, owned two shares, they were also only to have one vote each (that is, George and James Milns jointly). All decisions were to be recorded in a book of sederunt, kept by the clerk.

Meetings of the shareholders were to be held frequently, 'particularly one each third month', and an annual general meeting was to be convened on the last Wednesday in September, at which the books were to be balanced and examined. If a partner died, his heirs were obliged to withdraw 'his share with Profit and Loss' at a rate of a quarter every three months. Provision was made in the case of any of the partners being pursued by creditors, to protect the company, and, in case of any dispute, arbitrators were to be appointed. No partner was to take a share in another glass bottle manufactory during the period of the contract, except Thomas Summers, who 'is hereby allowed to Continue his Concern and Share in the Glasgow Bottle house', nor were they to buy bottles elsewhere, under penalty of £50 sterling. However, if any of the partners had taken his 'full share of the bottles to be made by the Company... according to his concern therein' he could take 'what more bottles he may have use of Occasion for where he pleases', although it was expected that he would buy them from Leith, in his own and the company's interest. Every partner, many of whom

appear to have been consumers of bottles, was to provide an account of his dealings with the company every six months, and to settle any outstanding bills.

It is clear from one clause that the co-partners were part of a close-knit community of merchants, who were well acquainted with each other, both as individuals and as businessmen. The agreement stipulated that 'as one of the strongest motives for the several Persons above mentioned their Entering into this Contract is the Confidence they have of one another and the Support that the Manufactory will have by the Consumpt of the Partners', none of them should be able to sell their shares during the ten-year term of the contract. The symbiotic relationship between consumption and manufacture of the bottles was obviously a great strength, and a likely foundation for a successful company, which, indeed, it proved to be.

Apart from the fact that it was at Leith, no site for the proposed glassworks is specified in the agreement. However, it is clear from an advertisement in the *Edinburgh Evening Courant* on 13 October 1746, that it was still in North Leith:

> That any Person who can furnish broken Glass, Wood, Soap, Fern, Whin, or Heather Ashes, will meet with due Encouragement, from James Miln at Leith, or the Glasshouse in North Leith, where, in a little Time, Glass Bottles of all Sorts will be manufactured, and sold at reasonable Rates.

This was followed by a further announcement on 10 November 1746:

> Whereas at the Glass-house in North Leith, Quantities of BOTTLES of all Sorts have been lately made, and have given entire Satisfaction on Trial, the Undertakers expect, that every Body will encourage a Manufacture which they have set up as well to advance the Country's benefit as their own, expecially that the Bottles are as good in Quality, and to be sold as cheap as at Newcastle, at the Glasshouse aforesaid in Wholesale, and in Retail by George and James Milns South-Leith; at both which Places good Encouragement will be given for Soap, Wood, Heather, Fern and Whin Ashes, and broken Glass.

Histories of Leith are consistent in their recording of subsequent events: that a fire in 1746 or 1747 caused the new glassworks to close and move to South Leith. Arnot, in his *History of Edinburgh*, wrote in 1779:

> The present bottle-house company was established A.D. 1746. They began work in the bottle-house at North Leith; but, it being burned

> down during the first year of the partnership, the company, in the year 1747, built a new brick-house on the sands of South Leith.'[220]

Later historians have tended to follow Arnot's statement that the glassworks burned down, but none of them offers any evidence.[221] Contemporary newspapers show that there was indeed a major fire near the glassworks, but there is no mention of the works itself being destroyed. An entry in the *Scots Magazine* for January 1747, stated that 'Early in the morning of the 20th, a fire broke out in the tenement in North Leith, built by James Sim, Ship-Carpenter, and in a few hours consumed it. Fourteen families were burnt out, but saved their lives with difficulty.'

The event was also recorded in the *Edinburgh Evening Courant*, on 20th January 1747 :

> This morning about three o'clock, a fire broke out in a large new tenement in North Leith, near the Glass-work, belonging to a Ship Carpenter there, and burnt with great violence till the whole was consumed. No lives were lost, but great quantities of Household Furniture destroyed.

A similar notice was printed in the *Caledonian Mercury*, which followed it up on 22 January by stating: 'We are assured that the House belonging to John Syme, ... burnt on Tuesday morning, is insured in the Sun Fire Office of London, to the value of 900L.

The event made a considerable impact locally. On 8 February 1747, the West Kirk session met to consider the recommendation of the 'Revd. Presbetry' of Edinburgh, for a collection to help the victims of the fire, who had 'lost their whole household furniture, wearing apparel and other effects, to the value of 1000 Pounds Sterling, according to estimates given in by said sufferers, some ... having many children rescued from the flames in their shirts.'[222] None of these contemporary accounts associates the fire directly with the glasshouse, nor is there any newspaper reference to the sudden closure of the new glassworks, as one might expect.

There is, in fact, some evidence that the glasshouse did *not* burn down and was still in existence over two years later. On 6 September 1749, an agreement was registered between John Sime and his wife and their son, also John Sime, regarding their property in North Leith, including the site of the glassworks: 'all and haill the said dwelling house lately rebuilt and now burnt ... with the office houses ... yeard and

Glasshouse ... with that part of the peer and shore belonging thereto.'[223] It seems reasonable to deduce from this document, and the newspaper reports, that it was only the tenement which burned down; the glasshouse remained, and may well have continued to operate. A much later reference may also support the continued existence of the glassworks beyond the date of the fire: among the properties listed in his testament of 3 March 1789, John Sime included:

> the dwelling house ... with the yard and glasshouse afterwards built thereon (afterwards pulled down) sometime possessed by the deceased Robert Wightman ... all which subjects were sometime ago acquired ... from...Robert Wightman ... and which dwelling house was repaired and rebuilt by my said father and was afterwards burnt and demolished by ffire together with the new square of dwelling houses afterwards built ...[224]

Once again, no reference is made to the fire affecting the glasshouse.

It is, in fact, quite possible that the North Leith glassworks was so successful under the new co-partnership that an additional site at South Leith was chosen as suitable for expansion, something which would not have been possible on the original premises. Certainly a plot on an empty stretch of sand, away from densely populated tenements, would appear to be more suitable for a manufactory which, inevitably, produced both fire and a great volume of smoke. (Fig.20).

Whatever the exact sequence of events, the managers of the 'Edinburgh Glass-house and Manufactory at Leith' presented a petition to the magistrates and town council of Edinburgh[225] for the feu of a piece of ground in South Leith, described in the later sasine as:

> on the sands adjacent to the Links of Leith which has hitherto been waste lying to the eastmost of the ground lately fewed by the City to William Adam Archeteck and bounded by the said few to the north west and by the high road which leads from the town of Leith towards Musselburgh upon the south west ... [226]

A charter was granted to the company by the town council, on 21 March 1748, which retrospectively fixed the entry date to the site as Whit Sunday 1747, only a few months after the tenement fire. The terms of the charter show that the burgh was keen to encourage the company: as superiors, they required feu duty of only one merk Scots annually, so long as the site was used only as a glassworks; if the usage changed, the duty would be £10 Scots a year. Another significant clause, and one

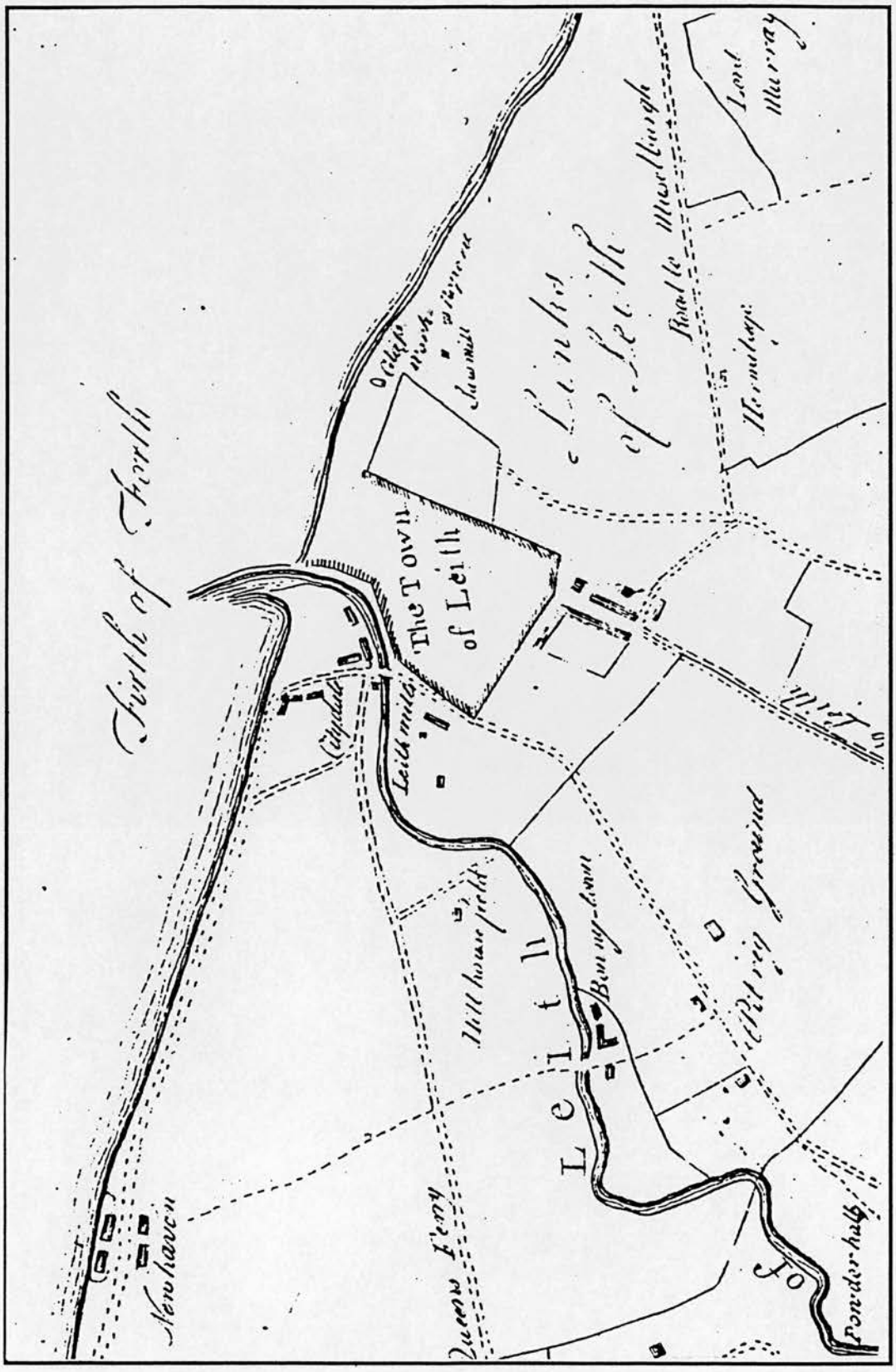


Fig.20. Leith, showing glasswork, 1759. Detail from 'A Plan of the City of Edinburgh...' Richard Cooper. (Courtesy NLS)

and one which was to be the subject of future disputes, was that all materials for the glasswork imported via the harbour at Leith, or the shore adjacent to the glassworks, 'shall in all time coming be free [of] payment of shoar dues', so long as the land was used for a glassworks.[227] James Miln and his heirs were forbidden to build a brewery on the site unless he paid 'one penny sterling for and upon each barell thereof.'

A sasine confirming the charter was registered on 28 March 1748, by which time the site was 'inclosed by a stone dyke and a Glass work built thereon possest by the partners of the said work and their servants'.[228] The dimensions of the site were stated: 229 feet on the south side, from east to west, 161 feet on the west, from south to north, 225 feet on the north and 161 feet on the east, almost exactly a rectangle. The feuing of this piece of waste ground was the start of the 'most important of the Leith glass-works',[229] while the cone built there appears to be the first Scottish glassworks to be illustrated by a contemporary artist. [230] (Fig.21).

On 1 August 1747, Thomas Summers, glassmaker and holder of two shares in the Edinburgh Glasshouse and Manufactory at Leith, took a 199 year tack, in his own right, of a piece of land at William Mitchell's sawmill in Leith. This land is later described as being part of the 'House and yeard at the Glass work of Leith'.[231] Summers himself achieved some fame in 1751, when an article in the *Manchester Magazine* described a bottle blown by him, measuring 40 by 42 inches, as exceeding 'any thing ever done in any Glass Work in Britain'.[232]

By 1750, James and George Miln had died, their heirs being their sisters, Helenora and Florence.[233] They disponed the land, and the glassworks built on it, to John Forrest, merchant in Edinburgh, as trustee for the other partners, on 17 December 1750.[234] John Forrest promptly applied to Edinburgh city council for a piece of ground to the east of the first site, 'whereupon the said John Forrest is to erect and build another glasswork' [235] A sasine confirming the transfer of the second parcel of land was registered on 6 February 1752,[236] the feu being £3 14 0 Scots, so long as it was used for a glasswork, otherwise £16 a year. This second site measured 441 feet from west to east, and 162 feet from north to south. Artist Paul Sandby shows only one glasshouse cone in 1751, and the actual date of the erection of the second one is, as yet, unknown.[237]

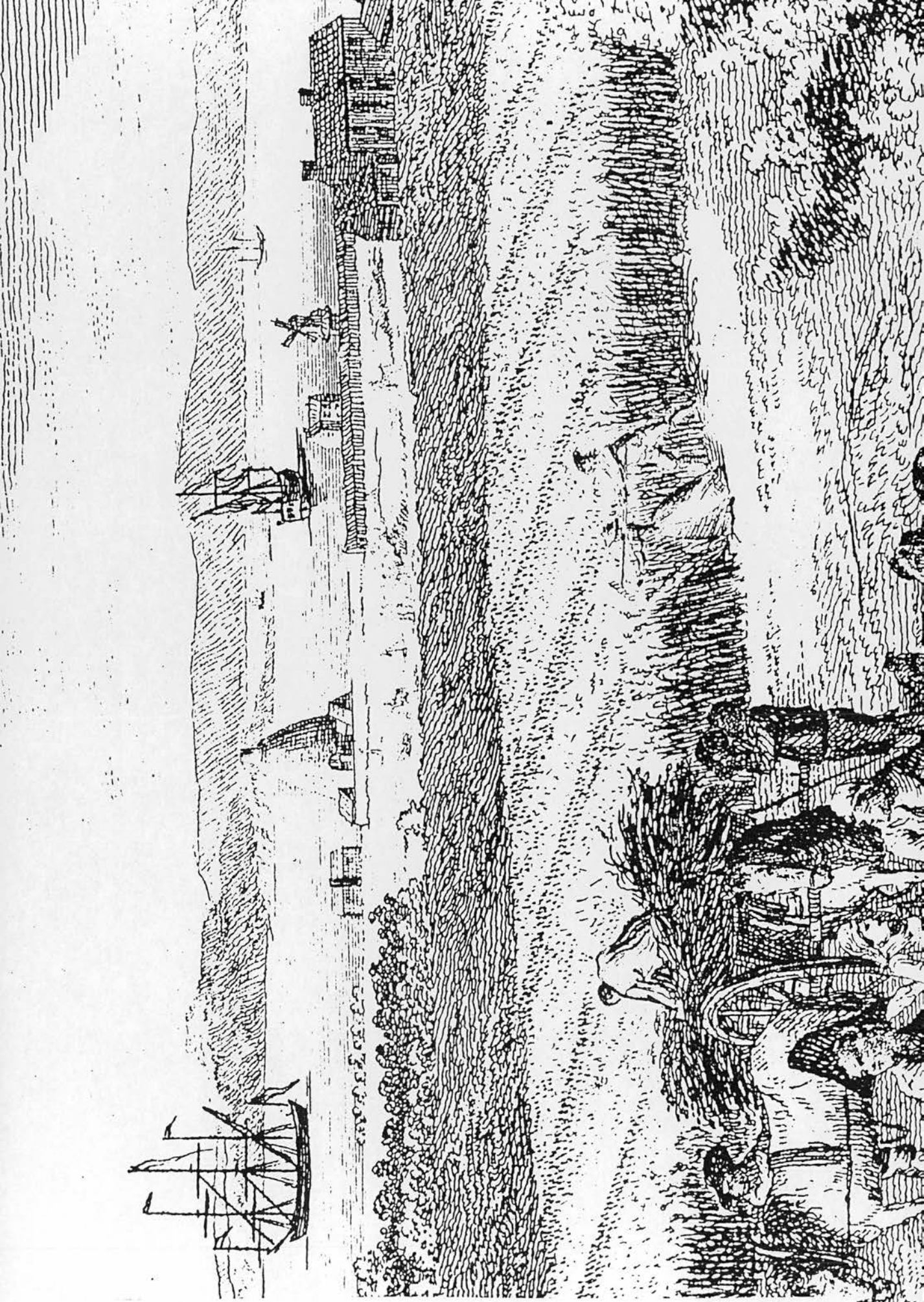


Fig.21. The glasshouse cone at South Leith, 1749, Paul Sandby. (Courtesy RCAHMS).

Coal was brought to the glasshouse from Alloa, Dysart, Limekilns and Throsk, kelp came from Eyemouth, Dunbar, Holy Island, Aberdour and Inverkeithing, while ashes were obtained from London, Culross and Fisherrow and clay was shipped up from Bristol.[238]

The success of the glassworks at South Leith is confirmed by a further co-partnership agreement, signed on 16 April 1756, in anticipation of the expiry of the original ten-year term. Since some of the original partners had died in the interim, with others taking their place, and since 'the said Manufactory and Bottle work has been, and may be still carried on to advantage', it was necessary to agree a further contract, this time for fifteen years, with a capital stock of £2,800 sterling, divided into fourteen shares of £200.[239] The full co-partnership list is in appendix 1. Once more, all the partners were either merchants or wine coopers, but this time one of the merchants had moved to London and another was in Bologne. Under the new contract, four of the partners were to be chosen as managers, to remain in post until the annual general meetings in September, when at least one would be changed each year, thus ensuring a more stable mangement structure than the three-monthly changes enshrined in the first agreement. James Thompson was declared to be clerk and cashier, but he had no vote, since share ownership was conditional on his employment.[240]

The clerk's duties were varied slightly: he was obliged to balance the books 'at the Outgoing and Extinguishing of each Furnace or Fire at the sight of the Managers'. The value of the company's 'effects and stock' had to be assessed and recorded by the managers, when the books were balanced, provided two-thirds of the partners agreed with their valuation. In the case of joint share-holders, the one who voted on the company's affairs had to have the written agreement of his fellow joint-shareholders. The company already had an account with the Bank of Scotland for £1,000 sterling, from which James Thompson was authorized to draw.[241] The remaining clauses are the same as those in the 1746 agreement.

Not only were the co-partnership agreements drawn up by the lawyers for the Edinburgh Glasshouse clear and comprehensive, but the partners appear to have been willing to co-operate with them. Such co-operation was not always the case in eighteenth-century businesses, and could lead to major difficulties. The problems of absentee decision-makers, lack of communication, and general mismanagement, have been described in the chapters on the slightly earlier glassworks of William Morison of Prestongrange and the Port Seton glassworks.[242]

There are several factors which are likely to have contributed to the success of the partnerships at South Leith: adequate capitalisation; the immediate availability of a sizeable current account, eliminating the cash-flow problems which bedevilled Port Seton, for example; concentration on production of bottles, a market for which was guaranteed through the partners, thus minimising risk; the virtually free feu of a site capable of future expansion; and, of course, the absence of non-productive payments to the Hay family, which had burdened the seventeenth-century licencees. Like Daniel Tittory during the early period of the Morison's Haven glassworks, and John Dehew at the North Leith works in the 1680s, the master glassmaker, Thomas Summers, was financially committed to the company in which he was a major shareholder; while the subsequent allocation of a share in the company to James Thompson, the clerk, gave him, too, an incentive to succeed, and to remain in post.

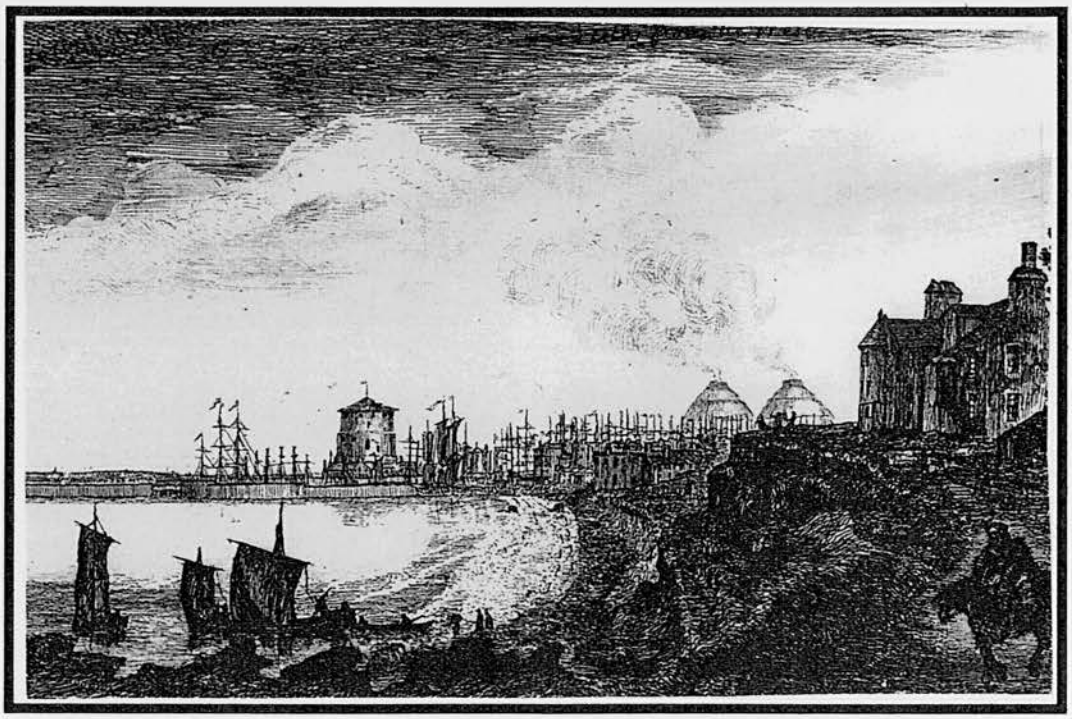


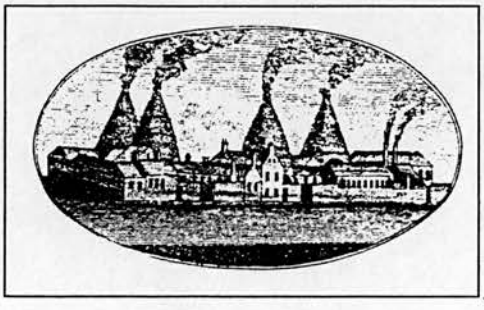
Fig.22. 'Leith from the West', showing two glass cones. Clerk of Eldin, n.d. (Copyright RCAHMS)

Although the first three glassworks on the Citadel and North Leith sites failed, glass production in Leith does appear to have been continuous from 1687 onwards, with a possible hiatus in the 1730s. Leith was, of course, particularly well situated for the distribution of goods to Edinburgh and elsewhere in eastern Scotland and for the export of bottles, in particular, to northern Europe. As the main Scottish entrepot for

wine, it was the ideal centre for bottle production, and it is no coincidence that wine coopers and merchant importers were shareholders, especially in the later companies. With its own quay, the glassworks in North Leith was also very well placed for importing the coal, sand, ashes, clay and other goods needed to produce the huge numbers of bottles required to make a furnace viable. Easy access for transporting heavy and bulky materials and the savings on shore dues were probable factors in the works' survival.

Although bottles, both plain and sealed, were the mainstay of all the Leith glassworks, window glass, apothocary wares, hour-glasses, beer, wine and mortar glasses, cruets and other less mundane items were also produced there. Green glass, requiring cheaper raw materials and less expertise, was by far the most common product, but there was also a white-glass house on the North Leith site, where crystal was certainly made in the 1680s. It is even possible that such 'fancies' as opaque white glass and enamelled wares could have been produced there for a short time, before the death of Sir James Standsfield, the prime instigator of the business, and arguably the most experienced of the entrepreneurs.

It is beyond the scope of this chapter to follow the fortunes of the various glasshouses at South Leith further into the second half of the eighteenth century, but there is no doubt that, having survived there for almost a hundred years, the Leith glass manufacturers went on to enjoy considerable success. They branched out into the production of crown and flint glass, and greatly expanded their export markets, becoming one of the major industries of Leith and fully justifying the move to the new site in 1747. The town was itself the subject of major expansion. Land reclamation and the development of large docks, new roads and bridges completely changed the shore-line. The town expanded to encompass completely the site of the South Leith glassworks, which, by the end of the eighteenth century, dominated the local skyline, as the Edinburgh Glass House Company bill-head of the end of the eighteenth century illustrates.[241]



[1]H.W. Woodward, *The Story of Edinburgh Crystal* (Edinburgh, 1984), 10.

[2] Thomson's Plan of Leith and its Environs, 1827.

[3] W. Maitland, *The History of Edinburgh from its Foundation to the Present Time* (Edinburgh, 1753), 500.

[4] Archaeologist Robin Murdoch, in an unpublished typescript 'A Short History of Glassmaking at Leith' draws attention to Maitland's comment and points out that he is very unlikely to have been referring to the Citadel glassworks.

[5] J.C. Irons, *Leith and its Antiquities*, ii (Edinburgh, 1896), 458.

[6] ECA, city muniments, box 7, bundle 15. The two 'un-English names' are spelt Cornelius De Wris and John Achillay.

[7] ECA, City muniments, box 7, bundle 15. Extract of a contract between the magistrates of Edinburgh and 'Eustascius Rogghe'. My thanks to Sheila Forbes for these two references.

[8] *ibid.*

[9] T. McGowran, *Newhaven-on-Forth: Port of Grace* (Edinburgh, 1985), 184.

[10] NAS, CH2/621/7. North Leith Kirk Session minutes. Thanks to Sheila Forbes for this reference.

[11] ECA, Council minutes, 5 May 1742. (SL1/1/63, p.36).

[12] There is an ancient rivalry between the inhabitants of Newhaven and North Leith, which is still part of the culture and which would make any confusion of the two locations in written records extremely unlikely. (Cathy Wood, member of a Newhaven family, pers. comm., 1998).

[13] See chapter 4.

[14] NLS, *Kingdom's Intelligencer*, 1663; see also H. Arnot, *History of Edinburgh* (Edinburgh,1779), 349.

[15] A boddle was a small copper coin equal to two pence Scots (M. Robinson (ed.), *The Concise Scots Dictionary* (Aberdeen, 1985), 52). Fleming uses this advertisement curiously: he does not mention the newspaper but claims that the figures came 'from an old journey book' and goes on to embroider the prices, eg. '"Beer glasses - two schillings and six placks ... Chopin [bottles] - four schillings and six merks.', which makes no sense at all. (A plack was a copper coin valued at four pennies scots (*ibid*, 499), a merk was worth 13s 4d). He adds 'NOTE: "All per dozen of twelve; all Scots money and so forth, of all sorts, conform to the proportion of the glass; they are of better stuff and stronger than is imported."' He does not relate this information to any date. (A. Fleming, *Scottish and Jacobite Glass* (Glasgow, 1938), 113).

[16] D. Robertson and M. Wood, *Castle and Town* (Edinburgh, 1928), 113-115.

[17] *ibid*, 111, quoting a letter dated 11 July 1657.

[18] *ibid*, 112.

[19] S. Mowat, *The Port of Leith* (Edinburgh, nd), 199.

[20] Robertson and Wood, *Castle and Town*, 117.

[21] *ibid*, 90. See Hutchinson, *Traditions of Leith* (Leith, 1825), 206; Irons, *Leith and Its Antiquities*, 121.

[22] D. Robertson (ed.), *South Leith Records* (Edinburgh, 1911), 99.

[23] Robinson, *Scots Dictionary*, 732.

[24] Francis J. Grant (ed.), *The Faculty of Advocates in Scotland 1532-1643* (Edinburgh, 1944), 169.

[25] NAS, RD4/10/185. Marriage contract.

[26] NAS, RS3/8/384.

[27] NAS, RD4/10/185.

[28] NLS, Adv.Ms.25.3.4 f.42; *RPCS*, 3rd Ser., i, 155.

[29] *Scots Peerage*, v, 224.

[30] *ibid*, v, 225.

[31] NAS, RD2/10/207, registered 5 October 1663, after Charles Hay's death.

[32] NAS, RD4/6/290.

[33] NAS, RD12/1160, registered 22 July 1663.

[34] NAS, RH15/102/6/3/3.

[35] NAS, RH15/102/6/4. Lady Margaret Hay was the eighth child of George, second Earl of Kinnoull. She does not appear to have married; a pension of £150 sterling was granted to her on 12 March 1696. (*Scots Peerage*, v, 225).

[36] NAS, RD4/11/430; warrant RD14/4/1141. Contract between Dagnia and Pape, registered 16 August 1664.

[37] This system conforms to the idea of the 'glassmaker's dozen', when the workmen were paid for a certain number of glasses, but actually made an agreed number more - which provided the purchaser with his profit. In this case the 'dozen' would be 15, but in other cases it was 20 or 21.

[38] David Whitehouse, director of the Corning Museum of Glass, writes: 'As far as I know, you could have a pot of green glass and a pot of colorless glass in the same furnace at the same time, without compromising the quality of either or both'. (Pers. comm., 8 Feb. 1999).

[39] Newman, *Dictionary of Glass*, 87.

[40] NAS, RD4/19/144. Bond, 3 Dec. 1664.

[41] NAS, RD14/6/245. 'Obligation: Joanna Coo and hir cautioners qua James Cranston', 18 Oct. 1665.

[42] H. M. Wood, 'An Account of the Family of Dagnia, of Newcastle and South Shields, Glassmakers', *Archaeologia Aeliana,* 3rd ser., xvii (1920), 229-43.

[43] NAS, RD14/7/975. Bond, Edward Dagnia and John Henderson, 3 Dec. 1664.

[44] A different time scale is given by Newman in *An Illustrated Dictionary of Glass*, (87). He states that the three brothers established their first glasshouse in Newcastle in 1648. However, he goes on to say that 'they operated *c.*1684, the Closegate Glasshouse'. The latter date is certainly supported by the evidence printed in Wood's paper.

[45] NAS, RD14/7/975. Agreement releasing Edward Dagnia and John Henderson from the obligation to repay their shares of a 100 merk loan.

[46] NAS, RD14/6/245. 'Obligation: Joanna Coo and hir cautioners q. James Cranston', 18 October 1665.

[47] Wood, 'Dagnia', 238. The IGI shows that the name Coo was used as an alternative to Coe. The family appears to have been particularly associated with Essex, for example: 'Joane Coo chr. 10 Feb 1618, Castle Hedingham Essex, fa. William Coo; Joane Coe b. abt 1642 Maplestead Essex, fa. William Coe, mother Susan'. There is, however, no obvious link between Essex and the glass industry, nor the known whereabouts of the Dagnias.

[48] Grant, *Faculty of Advocates*, 169.

[49] *Scots Peerage,* v, 223.

[50] *RPCS*, 3rd Ser., i, 498.

[51] T.C. Smout, *Scottish Trade on the Eve of the Union* (Edinburgh, 1963), 60. However, the coastal trade was maintained despite the winter conditions.

[52] *RPCS*, 3rd Ser., i, 525. Supplication by Robert Pape.

[53] *RPCS*, 3rd Ser., i, 570.

[54] ECA, Act or Regality Court Book, vol 6.

[55] NAS, RD14/4/1237.

[56] NAS, RD14/7/995.

[57] NAS, RD4/15/94. Contract between Robert Pape and James Bell, 24 Sept 1664.

[58] NLS, DEP.175 Box 41, bundle 115. Gordon-Cumming of Altyre and Gordonstoun papers.

[59] NAS, RD2/26/380. Agreement between William and James Bell.

[60] NAS, RD12/9/49. An Alexander Bell and his wife Janet Thomson, who lived in South Leith, had six children, including sons James, christened on 6 May 1606, and William, christened on 4 July 1610, (IGI) but no son called Adam.

[61] NAS, RD2/28/75.

[62] NAS, GD69/126. Balfour of Pilrig papers. 'Inventory of writs ... the dwelling house in North Leith, Yard and Glasshouse built thereon ...'; RS27/21/317.

[63] Mowat, *Leith*, 238-9.

[64] W.R.Scott (ed.), *The Records of a Scottish Cloth Manufactory at New Mills, Haddingtonshire 1681-1703* (SHS, 1905).

[65] *Edin Burgs.*, 8.

[66] W.R.Scott, *Constitution and Finance of English, Scottish and Irish Joint Stock Companies to 1720*, iii (New York, 1951), 138.

[67] NAS, RD4/57/264. Co-partnership agreement .

[68] NAS, RD4/50/679.

[69] NAS, RH15/102/8/1. Commission to supercargo.

[70] NAS, RH15/102/6/3/7. 'Translation Ladie Margaret Hay to the Earle of Argylle and Balcarras and others'. 24 Jan. 1678.

[71] NLS, DEP.175 Box 29, bundle 40. Gordon-Cumming of Altyre and Gordonstoun papers.

[72] NAS, RH15/102/6/3/8. 'The Glashouse in comp, with the Earles of Arguile, Belcarres, Sr. Robt Gordon of Gordinston and James Stclair of Roslin.'

[73] Mary Hay, another daughter of George, 2nd Earl of Kinnoull, and younger sister of Margaret, was born in Perth on 15 May 1633, married George 8th earl Marischal in 1662, and lived until 1701 (*Scots Peerage*, v, 220-225), but her name is probably a mistake on the part of the writer of the entry, since Margaret Hay's name is repeated in the partnership agreement, and she was still alive in 1689.

[74] NAS, RH15/102/6/3/9. It is interesting to speculate whether John Montgomery was related to the glassworker of the same name employed at Morison's Haven in 1637.

[75] NAS, RH15/102/8/2. 'Acct to John Farquhar of the severall payments to the Workmen ... unto 30 Nov. 1678'.

[76] NAS, RH15/102/6/3/8.

[77] NAS, RH15/102/8/2. '[?] accompt of what worke I have done for the use of Sir James Standsfield knight and James St. Clare Lord of Roslin', n.d.

[78] J. Paterson, *History of the Regality of Musselburgh* (Musselburgh, 1857), 64.

[79] NAS, RH15/102/8/2. Accounts.

[80] NAS, RH15/102/6/1; /2; /3. Letters to Sir James Standsfield from Newcastle.

[81] 'linnet holes ... transmitted heat from the main furnace to the subsidiary ones'. (Vose, *Glass*, 62).

[82] Hennzel does not specify the production time, but presumably he was being contracted to make window glass, by the broad glass method. It seems likely that he

was referring to his output in square feet: 240 square feet of glass, would make 60 sheets, assuming that each sheet measured approximately four feet square. This is a higher rate of production than that given by Godfrey. (Godfrey, *English Glassmaking*, 201).

[83] NAS, RH15/102/6/1. Moses Henzell at Newcastle to Sir James Stanfield at Edinburgh, 4 Feb. 1679.

[84] NAS, RH15/102/6/3/14. Onosiphorus Dagnia, Glassehouse of Newcastle to Sir James Stanfield, Edinburgh, 11 June 1681.

[85] D. Tyzack, *Glass, Tools & Tyzacks* (privately printed, 1995), 11.

[86] Kenyon, *The Weald*, 125-31.

[87] NAS, RH15/102/6/3/8. Glasshouse account n.d.

[88] NAS, RH15/102/6/3/8.

[89] NAS, RH15/102/6/3/8.

[90] NAS, RD13/44/644. 'Disposition Sir James Stansfield to Sir Robert Gordon of Gordonstoun'.

[91] NAS, RH15/102/6/3/14. Onosiphorsus Dagnia to Sir James Stanfield, Edinburgh, 11 June 1681.

[92] Godfrey, *English Glassmaking*, 187.

[93] Vose, *Glass*, 130. One of the conditions imposed by the patent to make bottles, granted to John Colnett in 1661, was that 'the bottles shall be marked with Colnett's particular *stamp* or mark' (my italics) (I.N. Hume 'The Glass Wine Bottle in Colonial Virginia', *JGS*, iii (1961), 93). But who would buy eighty-eight stamps? Why would anyone wish to buy them? Could they be re-used? This seems unlikely, not only because the seals were made to individual order, but because, according to Roger Dumbrell, although the brass die had to be made and cut by an engraver, 'for reasons not really apparent, with every repeat order for sealed bottles, a fresh die seems to have been cut.' (Dumbrell, *Antique Wine Bottles*, 20). They were sold for only 19s 10d Scots, roughly 2 3/4 pence each, which hardly implies a craftsman's product. And the question remains: what were the 'stamp glasses'? One possible, but unlikely, explanation, is that they were drinking glasses, or other vessels, bearing seals, in the manner used by George Ravenscroft at that period. When Ravenscroft (1632-1683) perfected lead glass, the Glass Seller's Company agreed in 1677, that objects made with it should be impressed with a seal bearing a raven's head, (Newman, *Dictionary*, 257) but, so far as can be ascertained, the practice was not widespread.

[94] NAS, RH15/102/6/3/12. 'Ane Inventar taken up by Alexander Young of all the things found in and about the glasshous in North Leith the 11 Oct. 1680. Being the tym that the said Alexr did enter therto upon Sir James Standsfield of Newmylnes his

accompt.'

[95] NLS, DEP.175 Box 35, bundle 64. 'Inventary of the Tools belonging to the Glasshouse in North Leith...'.

[96] Cruets are described by Mehlman as 'small bottles, usually with a stopper or lid and sometimes a handle ... for serving condiments (oil, vinegar, lemon juice, etc.) at the dining table.' They were imported into England from Venice in the 1660s and 70s. (Mehlman, *Glass*, 146).

[97] 'Suggeroun' is defined by Robinson (*Scots Dictionary*) as a kind of oats, so perhaps these were porringers.

[98] English potter George Ecton's inventory (1696) included 18 'malmelett dishes'. The term 'marmalade' was known in England from the 16th century. (Vaisey and Celoria, 'Inventory of George Ecton, 'Potter', of Abingdon, Berks, 1696', *Journal of Ceramic History*, vii (Stafford, 1974), 28, n.75).

[99] Newman, *Dictionary of Glass*, 49.

[100] NAS, RH15/102/6/3/15.

[101] NLS, DEP.175 Box 41, bundle 84.'Acts in ffavours of Sir Robert Gordon of Gordonstoune and others', 1682.

[102] NAS, RH15/102/6/3/8.

[103] NLS, DEP.175 Box 48, bundle 115. 'Information for Sir Robert Gordon of Gordonstoun & others, 1686'.

[104] NAS, RH102/15/8/2.

[105] NLS, DEP.175 Box 93 (bundle not numbered). 'The Conditions of offer & seall of the Glasshouses tools & matterialls window Glasses Bottells & uther glasses wt the lodging Adjacent to the Glasse Houses'.

[106] NLS, DEP.175 Box 48, bundle 115. 'Information for Sir Robert Gordon...anent expenses waired out upon the Glasswork in Leith'. The name of Rue does not appear again in the extant papers, but Robert Blackwood became a shareholder in the glassworks. It is not clear whether they may actually have been acting on behalf of the three remaining partners in the glassworks, who certainly owned the glasshouses and tools in 1687, as will be shown. It is possible that concern about this caused the delay in payments.

[107] NAS, RH15/102/2. Accounts.

[108] NAS, RH15/102/8/2.

[109] NAS, RH15/102/6/3/16.

[110] J. S. Marshall, *The Life and Times of Leith* (Edinburgh, 1986), 42.

[111] NAS, RD12/26/624.

[112] NLS, DEP.175 Box 70, f.1971. James Standsfield in Edinburgh to Robert Gordon

(no address), 7 April 1687.

[113] Alfred B. Searle, *An Encyclopaedia of the Ceramic Industries*, iii (London, 1930), 87.

[114] Newman, *Dictionary of Glass*, (25) says that antimony produces yellow glass. David Whitehouse, director of Corning Museum of Glass says that the ingredients listed 'suggest that it [the glass] was yellow or orange'. (pers. comm. Feb. 1999).

[115] Newman, *Dictionary of Glass*, 221.

[116] Arsenic was used as a decolouriser, but also to make white opaque glass. (Newman, *Dictionary of Glass*, 26).

[117] Standsfield uses a term which it has been impossible to trace: he asks what a 'cobert' of flint glasses sold for at the glasshouse.

[118] NLS, DEP.175 Box 29, bundle 43. Their signatures are Tyler and Longe, although their names are given as Taylor and Long in the contract itself. The name Longe is of some significance in Irish glass history: in 1589 a George Longe, who was concerned with several English glass-houses, bought the patent to manufacture glass in Ireland, and established a glass-house at Curryglas in county Cork. (Geoffrey Wills, *English and Irish Glass* (London, 1968), signature 8, p.5. (He is also mentioned in chapter 4). In 1687 there was one glasshouse in Dublin, situated near Trinity College, at Lazar's (previously known as Lazy Hill). (Peter Francis, pers. comm., Feb. 1999).

[119] See note 36 above.

[120] There is a reference to glass-handled knives for presents among the East India Company's exports to China in 1686. (G.A. Godden, 'English Glass Exports 1670-1760', *Ceramics*, iii (May/June, 1986), 146). My thanks to Peter Francis for drawing this article to my attention. Excavations near St. Denis, Paris, in 1981, uncovered an 'opaque sky-blue glass knife-handle' with elaborately moulded surface decoration, dated to before 1270. (H. Tait, ed. *Five Thousand Years of Glass* (London, 1991), 151). My thanks to David Whitehouse, director of the Corning Museum of Glass for this reference.

[121] Efforts to discover the meaning of 'schappie' work have so far failed. The term is not known to the staff of the Corning Museum of Glass (pers. comm. Feb. 1999). They suggest it may be an obsolete Scottish word, possibly referring to a colour, or to the quality of the glass. (I have not found a likely word in Scots dictionaries). Other suggestions are that it might simply refer to shaped glass, or to an old German word 'Schoppen', meaning tankard. My own theory is that there was a well-known German glass decorator called Johann Schaper (1621-70), who worked in enamels and signed some of his pieces. One particular shape of glass decorated in his style is sometimes called 'Schaper glass'. (Newman, *Dictionary of Glass*, 275). Perhaps his style of work

was known among 17th century glassmakers as 'schappie glass'? (David Whitehouse, does not consider this to be a possibility however).

[122] NLS, DEP.175 Box 41, bundle 115.

[123] NAS, RH15/102/6/3/17.

[124] W. Roughead, *Twelve Scots Trials* (Edinburgh, 1995), 63-84.

[125] Roughead begins with a quotation from King James VI's *Demonologie*: 'In a secret Murther, if the dead carkasse be at any time thereafter handled by the Murtherer, it will gush out of blood; as if the blood were crying to Heaven for revenge of the Murther.'

[126] *Edin. Burgs.* i, 8.

[127] NAS, RD12/34/9. Deposition by John Dehew glassmaker to his wife Elizabeth Barton, 3 January 1694.

[128] NAS, GD305/1/164/46. 'Memorandum for the Viscount of Tarbet of the Contents of the Tacks and Contracts anent the Glasshouse in Leith'.

[129] *ibid.*

[130] John Dehew was almost certainly a member of the de Houx family, one of the four great glass-making dynasties of Lorraine. Isaac and John are recurrent family names. Glassmakers bearing numerous variations of the name are recorded in England from the late 16th century onwards, some of them working in the Manchester area. (Vose, *Haughton Green*, 60-3).

[131] *ibid.*

[132] E. Dunbar Dunbar, *Social Life in Former Days* (Edinburgh, 1866), 128, quoting an unspecified family source. This is confirmed in DEP.175 Box 30, bundle 45.

[133] NAS, GD305/1/164/46. 'Memmorandum for the Viscount of Tarbet of the Contents of the Tacks and Contract signed by...Sir Robt Gordon [etc.] anent the Glasshouse in North Leith'.

[134] *ibid.*

[135] NAS, RD2/69/784.

[136] NAS, RH15/102/8/2.

[137] *Edin. Marriages*, 9.

[138] J. Ainslie, *The Ainslie Family of Lasswade* (privately printed, 1994), 30. My thanks to Sheila Forbes for drawing my attention to a copy in the library of the Genealogy Society of Scotland.

[139] *Edin. Burgs.*, i, 24.

[140] Monica Clough, 'The Leith Glass Works: 1689-c.1708', *Scottish Industrial History*, v (1982), 1.

[141] NAS, GD305/1/164/28. This entry is not mentioned by Clough. Antimony was

added to the glass batch to act as an opacifier and to colour it yellow. This is the first reference to suggest the possibility of the production of opaque and/or coloured glass at Leith; it pre-dates the arrival of Longe and Tyler by 10 years.

[142] *Edin. Burgs.*, i, 404. His wife's mother was Anna Stansfield. No connection with Sir James Standsfield has been traced, but she may have been a relative.

[143] NAS, RD4/90/86.

[144] NAS, GD421/5/372. George Heriot Trust papers.

[145]NAS, RD4/57/264.

[146] North Leith OPR.

[147] It is just possible that he was a descendant of John Dines, glazier, the opponent to Sir Robert Mansell's monopoly, discussed in chapter 4.

[148] Dehew and Ainslie are, curiously, described as 'carpenters'.

[149] *RPCS*, 3rd Ser., xiv, 382.

[150] No evidence has come to light to amplify this statement, and it is not clear to which of the previous enterprises he referred.

[151] NAS, GD305/1/167/87. Cromartie muniments.

[152] *RPCS*, 3rd Ser., xv, 297.

[153] NLS, Dep.175 Box 29, bundle 43. 'Accompt of Charge & Discharge Betwixt The Heritors of the Glass-hous in Leith and the Copartners in Compa[?] of the Glaswerk there 21 Feb. 1689'.

[154] NLS, DEP.175 Box 22, bundle 17. 'Instrument Ainslie & others agst Hamiltons, 28 Oct. 1690'.

[155] NLS. DEP. 175 Box 30, bundle 44. 'Obligation be Ffrancis Thomsone to the heritors of the Glasshouses in North Leith 1691'.

[156] 'shadd' = shade = 'shed, a roofed structure used as a shelter or store', M. Robinson, *Scots Dictionary*, 603.

[157] NAS DEP.175 Box 30, bundle 44. 'Agreement betwixt Sir Robert Gordon and George Rankine', 7 March 1692.

[158] NAS, RD3/44/646. 'Disposition Alexander Hamilton to Sir Robert Gordon, 28 April 1693'.

[159] NAS, RD13/44/645. 'Disposition by Mr. Hew Dalrymple to Sir Robert Gordon, 29 Dec. 1693'.

[160] NLS, Dep. 175 Box 30, bundle 45. 'Copie of my Glasshous discharge', 17 October 1696.

[161] NLS, Dep.175 Box 30, bundle 45. From Leith, 6 Dec. 1697.

[162] The phrase 'new built glasshouses' tends to be repeated in the legal documents, so it is not clear whether they were the new buildings of 1688, referred to by Dunbar, or

more recent ones.

[163] NAS, RD12/39/839 .

[164] NAS, GD112/15/59/24; /62/5; GD305/1/162/64.

[165] NAS, E70/4/10. Hearth Tax for North Leith. It is curious that glassmaking is not listed in the occupations of Edinburgh in the 1690s, (H. M. Dingwall, *Late 17th-Century Edinburgh* (Edinburgh, 1994). In Appendix 4; Robert Glasgow was listed as 'servant'.

[166] NAS, RD14/39/863. Co-partnership agreement in cork-cutting business.

[167] NAS, RD4/96/248.

[168] M. Clough, 'The Leith Glass Works: 1689-c.1708', *Scottish Industrial History*, v (1982), 3.

[169] NAS, RD2/85/816. Declaration [?] Gordon ... to Balfour, 8 June 1699.

[170] NAS, SC39/76/9. Register of Deeds, Sheriff court of Midlothian, vol. 6. Disposition Balfour to Balfour, 21 Oct. 1699.

[171] G.P. Insh, *The Company of Scotland* (London, 1932), 35.

[172] G.P. Insh, 'The Founders of the Company of Scotland' *SHR*, xxv (1928), 253.

[173] Insh, *Company of Scotland*, 49.

[174] WRH, SC39/76/9. See n. 167.

[175] *Edin. Burgs.*, i, 44.

[176] B. Balfour-Melville, *The Balfours of Pilrig* (Edinburgh, 1907), 60.

[177] NAS, GD421/5/372.

[178] BOS, BS1/1/1. List of Adventurers.

[179] *ibid*, 64.

[180] NAS, RD14/39/863, Box 195.

[181] NAS, GD305/1/162/64.

[182] NAS, RH15/102/8/1.

[183] ECA, Minutes of the Town Council, SL1/1/35, p. 217, 27 Nov. 1695.

[184] NAS, GD305/1/164/46. This was not mentioned by Clough.

[185] NAS, GD305/1/158/23. 'Act in Favours of the Masters of the Glass-Work at Leith'. J.C. Irons says that 2,600 dozen bottles were imported at Montrose in February 1700, but gives no source. (Irons, *Leith and its Antiquities*, 143).

[186] NAS, GD305/1/166. 'Inventar of the List of Debts with the value of the accompts of Glass in Costodie and money and materialls belonging to the Glasswork ..., 31 December 1702.'

[187] Clough, 'Leith Glass Works', 5.

[188] Clough lists this as being on 'the shorter list of those to whom money was paid', but his entry is, in fact, with all the rest of the debtors. (Clough, 'Leith Glass Works'

5)

189 *Edin. Recs. 1701-1718*, 103. A committee appointed by the council to investigate asked Ainslie for written proof of the gift of 'their pretended exemption', which was 'refused', so they decided the dues had to be paid.

190 NAS, RD3/109/121. Bond registered 30 May 1706.

191 The furnaces could not operate while essential repairs were undertaken.

192 *The Edinburgh Courant*, 19-21 August 1706.

193 *Calendar of Treasury Books*, xxii, 128. Currency presumably sterling.

194 See chapter 11.

195 NAS, GD305/1/160/91.

196 Clough, 'Leith Glass Works', 7.

197 WRH, AC9/330. Oswald v. Ainslie. I am grateful to Sue Mowat for this reference.

198 *Edinburgh Courant*, 24-27 February 1710.

199 *Scots Courant*, 1-3 June 1713.

200 NAS, RS27/110 ff 80-93. Edinburgh register of sasines.

201 *ibid.*

202 ECA, *Edinburgh Charters*, ii, 601.

203 WRH, AC9/1013/41. Charter Partie, 14 Sept. 1722.

204 NAS, CC8/8/112/1. Edinburgh Commissary Court. Register of testaments.

205 AC9/1013/31. Admiralty Court. Hamilton v. Crawford, 1727.

206 T.C. Smout (ed.), 'Extracts from the Journal of Henry Kalmeter's travels in Scotland 1719-20', *SHS Miscellany*, xiv (1978), 24.

207 NLS, Ms.6437 f. 31; 6439 f. 31,35; 6440 f.61, 62; 6441 f. 60; 6442 f. 79. Halkett of Pitfirrane papers.

208 NAS, GD69/126. Balfour of Pilrig papers. 'Inventory of the Writs and Evidents belonging to the Dwelling house in North Leith, Yard and Glasshouse built thereon Disponed by James Balfour of Pilrig to Robert Wightman Mercht. in Edinr'.

209 NAS, RS27/110 f.80-93. Edinburgh register of sasines.

210 NAS, GD69/126.

211 ECA, Council Minutes. SL1/1/52, 20-2.

212 ECA, Register of Shore Dues at Leith.

213 NAS, RS27/120/85*v*. Edinburgh register of sasines.

214 Mowat, *Port of Leith*, 233. 'Gold Penny was a duty paid to Edinburgh on all ships built or sold at Leith.' (*ibid*, 231).

215 *ibid*, 233.

216 WRH, CS96/4520. Factor's account book. The currency is not specified, but

appears to be Scots.

[217] NAS, RD14/87/1747. A complete list of the partners is given in appendix 1.

[218] NAS, RH15/54/18/40. Papers of Edward Burd.

[219] Mowatt, *Port of Leith*, 233.

[220] Arnot, *History of Edinburgh*, 347.

[221] Mowat, *Port of Leith*, 234; Hutchinson, *Traditions of Leith*, 206.

[222] NAS, CH2/718/20 f.42. My thanks to Sheila Forbes for the newspaper references.

[223] NAS, RS27/136/58*v*.

[224] NAS, CC8/8/130/2. Testament testamentar and inventary of the debts of John Sime. Thanks to Sue Mowat for this reference.

[225] NAS, RD4/176/2/554. Disposition of 'Glass Bottle Manufactory'.

[226] NAS, RS29/134/107. Sasine of land in South Leith to James Miln.

[227] NAS, RD4/176/2/554.

[228] NAS, RS29/134/107.

[229] Woodward, *Edinburgh Crystal*, 7.

[230] Fleming's section on the Leith glassworks is more than usually nonsensical. Having claimed that the proprietors of the Citadel works created a joint-stock company called 'The Edinburgh and Leith Glass Company', he goes on to say they bought a site 'in Salamander Street and an up-to-date plant was installed. The services of Archibald Geddes ... were secured ... During the troublous Jacobite Rising [1745] ... one of the glasshouse cones (of which there were seven) ... threatened to collapse. There was danger in delay so Geddes appealed to the military authorities in Edinburgh Castle for assistance as no bricklayers were otherwise available. They were, happily, able to obtain skilled labour and the task of rebuilding the cone was soon accomplished'. (Fleming, *Scottish Glass*, 112). In fact, even the first cone was not built until 1747, as has been described; only two cones are shown on Wood's plan of Leith of 1777, while the adjacent street was still labelled 'Road to Musselburgh' (the road appears as 'Salamander Street', and seven glass cones are illustrated in Thomson's plan of Leith and its environs of 1827); Archibald Geddes was not involved with the Leith glassworks until the 1780s. The story of the soldiers with time on their hands, and such fortuitous brick-laying skills, during the '45, appears to be pure fantasy, although it has been repeated by others. (Woodward, *Edinburgh Crystal*, 45; Scott Marshall, *Life and Times of Leith*, 44).

[231] WRH, CS.232/640/2/308, 'Inventory of the Progress of Writs of the House and yeard at the Glass work of Leith which pertained to the deceased Thomas Sommers sometime Manadger of the said Glass works', 1763.

[232] *Manchester Magazine*, 15 January 1751. (Manchester Central Library). Quoted

(relatively accurately) in Fleming, *Scottish Glass*, 113.

[233] NAS, RS27/137/1.

[234] NAS, RS27/137/406.

[235] ECA, McLeod index, Bay D, bundle 119, (92).

[236] NAS, RS27/139/283.

[237] Arnot says an additional glasshouse was built in 1764, (Arnot *History of Edinburgh,* 347) a date reiterated by Marshall, (*Life and Times of Leith*, 44), but no evidence is presented.

[238] ECA, Register of Shore Dues at Leith.

[239] NAS, RD4/96/555. My thanks to Dr. Hazel Horn for this reference.

[240] A James Thomson was appointed to take charge of the Morison's Haven glassworks in *c.*1710, and the name of John Thomson, glass blower, appears both at Morison's Haven and Kirkcaldy (he was aged 48 and married in 1720 (AC9/680)), it is likely, therefore, that James Thompson, clerk at Leith, was son of either James or John.

[241] Credit of £1,000 sterling was granted to the original company on 17 Sept 1746. (BOS, BS1/5/5. Minutes, 1742-62).

[242] A contemporary example of a co-partnership agreement, which was largely ignored by the signatories, that of the Cobalt Mining Company at Alva, which eventually ended in disarray, is discussed in Turnbull, 'Scottish Cobalt and Nicholas Crisp', *English Ceramic Circle Transactions,* xiv, Part 2 (1997), 144-152.

[243] NAS, GD112/15/476/60. Bill to Earl of Breadalbane, February 1795.

CHAPTER 7

THE ECONOMY AND THE UNION

It was argued in chapter two that the commercial foundation, on which the future expansion of manufacturing and trade was built, was firmly laid during the seventeenth century, which saw the start of a formal banking system and the evolution of business methods suited to industrial growth. The economic background to the commercial activities of Scottish entrepreneurs at the turn of the century was far from smooth, however, culminating in the loss of up to a quarter of the country's liquid capital in the Darien scheme, which finally collapsed in 1700.[1] Seven years later came the union of the Scottish and English parliaments with all the upheaval and uncertainty that entailed. The issues surrounding the Union are too complex to rehearse here, so this chapter will be limited to examining briefly some aspects of the economic background, with particular reference to the glass and other 'introduced' industries, especially soap and sugar production.

In his book *Scottish Trade on the Eve of the Union 1660-1707*, Smout examines the events of the last decades of the seventeenth century with regard to trade and commerce. One important change to which he draws attention was the 1672 legislation which removed many of the long-standing privileges of the royal burghs, enabling anyone to sell or export commodities or import raw materials, although a few imports, including wine, were still reserved to them.[2] Although they regained control over foreign imports in 1690, the royal burghs were by then unable to enforce their rights, and the unfree burghs gained trading rights without having to contribute a commensurate share of taxes. The royal burghs were thus reluctantly forced to recognise changes which had been taking place unofficially for many years, resigning themselves to the removal of trade restrictions, which would have severely constrained economic progress if they had remained in place.

Smout also shows that by the end of the century, partly because of events beyond their control, almost half of Scottish exports were going to England. As he points out, the absolute control of the monarch over Scottish foreign policy had a disastrous effect on Scotland's relations with two of her most important trading partners, the Dutch and French. The wars between England and Holland from 1652-4, 1665-7 and 1672-4, and even more those with France from 1689-97 and 1701-13, disrupted Scottish trade, exposed the fleet to French privateers and caused the loss of the

important wine trade.[3] To balance these debits, Smout cites peace with England, which enabled expansion of the inland trade, particularly in linen and cattle. Although increasingly dependent on trade with England, Scottish merchants were faced with tariffs on coal and salt, a rise in the duty on linen in 1698, and the threat of the English Alien Act, which would have prevented exports of coal, linen and cattle from the end of 1705.[4] Clearly these matters demanded resolution if Scottish trade were not to be decimated.

In addition to these difficulties, there were, as Whatley points out, 'weaknesses *within* the Scottish economy'.[5] He names in particular, low grain prices, which had restricted agrarian improvements; a depressed local market, exacerbated both by low agricultural returns and stagnant urban wage levels; and a struggling industrial sector. He goes on to say that one of the major problems for aspiring manufacturers was 'that low-grade raw materials and poor workmanship forced Scottish goods into the bottom corners of the market, which returned the lowest prices.'[6] In the case of the glass industry, the profit margin on bottles was certainly lower than that on window glass, for example, but that was compensated for by a more certain market.

Smout criticises Scottish economic policy in the seventeenth century for attempting to transplant industries into 'the very different economic climate of Scotland', without questioning whether it was sensible to do so.[7] He goes on to suggest that the policy of encouraging small manufactories was a failure, since only the sugar makers experienced real commercial success, quoting in evidence the continued importation of soap, glass, paper and cooking pots. It is necessary, however, to examine the statistics more closely before such a conclusion can be drawn. In the case of glass, the market for window glass and drinking glasses appears to have been too small to support its production for long at Leith, which was the only glassworks operating in Scotland between 1661 and 1698. Bottles, however, were a much more successful product and self sufficiency *was* possible, although not always encouraged by importers. It is, therefore, reasonable to expect that window glass and vessels other than bottles should have continued to be imported. Similarly, without being certain that the soap being imported was the same as that being produced at Leith and Glasgow, it is difficult to be certain that 'the new concerns did not make Scotland self-sufficient in their various products'.[8] In fact, James Montgomerie's application to make 'good white soap'[9] implies that the existing product was inferior (which would support Whatley's point about the 'bottom corner' of the market). Despite this caveat,

it must be agreed that the introduced industries' contribution to the economy was a small one.

Whatley describes the last thirty years before the Union and the following two to three decades as 'economically stagnant'[10] but considers that, by the 1730s, manufacturing was recovering, not so much thanks to the benefits of the Union *per se*, but because the Scots fought hard to make the most of those benefits it did afford and to manage the detrimental aspects of the Treaty.[11] The economic legacy of the Union is too complex a matter to discuss here, although some aspects of its immediate impact on the glass, soap and sugar industries are discussed below. In the longer term, freedom to trade with the English colonies was of great importance, as the glass export figures discussed in the conclusion will illustrate but until the middle of the eighteenth century, the glass, soap and sugar industries depended on the domestic market for their survival.

Bearing in mind the spectacular failure of the Darien scheme, which itself followed on the heels of the 'lean years' when severe famine caused great hardship, the late 1690s seems an odd time for three different companies to apply to set up glassworks in Scotland, in addition to the one already established Leith. It seems likely, however, that this surge of interest was triggered, not by the economic climate in Scotland, but by fiscal policy in England, which was directly related to the war with France: the ironic spin-off from an event otherwise so detrimental to Scotland's economy.

In May 1695, to the great dismay of those involved, the English parliament imposed excise duty on glass, stone and earthenwares, tobacco pipes, coal and culm, the money being earmarked to pay for the war with France. Bottles were rated at one shilling per dozen for quarts and sixpence a dozen for pints, while looking glasses and flint glass were taxed at an even higher rate, up to 20 percent in some cases.[12] The duty had an immediate effect on the English glass industry, as witnessed by numerous petitions from glassmakers all over the country. At the end of 1696, for example, a petition from the Stourbridge glassmakers stated that if the tax continued 'the Petitioners and their Families, must starve, or be maintained by their Parishes.'[13] On the same day, 2 December, the London glassmakers presented a similar case for abolition, followed the next day by those from Newcastle upon Tyne, who said that the duty was 'a great Discouragement to the ... Trade; and that if it continued, will tend to their utter Ruin, and all those employed under them.'[14] All the petitions were referred to a committee, which reported on 17 February 1697 that the duties had:

> lessened the Consumption of their Manufactures, to the Ruin of many hundreds of Familes. That the Cheapness only of those Manufactures will cause a Consumption of them. That, by reason of accidental Hazards and Losses, these Manufacturers are not capable of bearing such Duties; and that the Use of the greatest Part of them depends more upon Fancy than Necessity.[15]

In other words, the industry manufactured non-essential items, for the lower end of the market, for small profit margins and their most important function was to provide employment and financial support for numerous families. To justify their conclusion, which was that the duty should be removed, the committee reported the evidence presented to them by the various petitioners mentioned above, and others. The comments of the hitherto well established and successful English glass producers are interesting; they put into perspective the extra difficulties experienced by the more fragile Scottish industry. The London glassmakers, for example, said they normally worked for forty-four to forty-five weeks a year - twice the number regarded as necessary in 1687 at the Leith glasshouse. They, like all the other witnesses, reported that, as a result of the duty, they had been unable to sell their bottles, which produced over two-thirds of the duty on glass, and now held huge stocks of them.[16]

While their case was almost certainly exaggerated, the English glasshouses were clearly suffering considerably, and their problems offer a possible explanation for the sudden interest in setting up glasshouses in Scotland. Francis Jackson, from a London bottlehouse, told the House of Commons committee that the Dutch were offering him extremely favourable terms to go to work in Holland, including exclusive production rights to make bottles and exemption from military service for twenty-five years, as well as exemption from duty on raw materials for three years.[17] If the Dutch were well aware of the lack of employment for the skilled English workforce, it is highly likely that Scottish entrepreneurs had the same idea, and decided to take advantage of such an opportunity to recruit staff and set up new glasshouses. They may also have had in mind the chance to undercut English prices. Unfortunately for the Scottish adventurers, the English parliament responded to the public outcry by halving the tax in 1698 and repealing it in 1699, the year after William Morison and David Lord Elcho were granted their patents.

Given the economic and political uncertainties of the years preceding the Treaty of Union, it is not surprising that the glass manufacturers were concerned for the future of their industry. William Morison, owner of an agricultural estate on which were coal

mines, salt pans, a harbour and a glassworks, was one of the thirty-one members of the Scottish parliamentary commission in London, which was charged with negotiating the union of the two countries. Morison claimed in 1714 that he had been so keen to ensure the Protestant succession he had laid aside 'all consideration of his own losses but was active in carrying on the Union' despite being aware that it would 'destroy' his glass manufactory.[18] Such altruism is not evident elsewhere in Morison's affairs, so it seems rather more likely that he had expected to gain overall from implementation of the Act of Union, although it is just possible that genuine abhorrence at the thought of a Catholic monarch motivated him in this case.

Discussions about the economic aspects of the Union focus much attention on the removal of the trading restrictions imposed under the English Navigation Acts, although opinions are divided on the real value of that concession in the short term.[19] Whatever the reality, Article IV of the Treaty of Union, which granted Scotland freedom of trade and navigation, passed through the Scottish parliament on 19 November 1706, without amendment and by a majority of 156 to 19, 'presumably because even many opponents of incorporating Union saw no objection to freedom of trade by itself.'[20] More controversial, and of immediate rather than long-term concern, however, was the threat to the privileges enjoyed by the manufactories under the 1681 Act, which the English parliament wanted to remove at once, putting the two countries' industries on an equal footing. Article VI of the Treaty of Union, as presented to the Scottish parliament for debate in October 1706, began:

> That all parts of the United Kingdom, for ever, from and after the Union shall have the same Allowances and Encouragements, and be under the same Prohibitions Restrictions and Regulations of Trade, and lyable to the same Customs and Dutys on Import and Export.[21]

The Scottish parliament succeeded in softening the impact on the few established industries, however, by passing amendments to that and other articles dealing with trade. In Article VI they inserted:

> excepting and reserving the Duties upon Export and Import of such particular Commodities from which any persons the Subjects of either Kingdom are specially liberated and Exempted by their private Rights which after the union are to remain safe and entire to them in all respects as before the same. [22]

This amendment was not of any political or long-term importance, but it was helpful to the maintenance of the small Scottish manufacturing base. William Morison

referred to these rights being reserved in his petition, after claiming that the Union had rendered his profits 'ineffectual'.

As far as the glass industry was concerned, the Act of Union of 1707 removed the ban on imports of bottles but, thanks to the Article VI amendment, exemption from duty on raw materials, which had been granted with the status of manufactory, remained, at least in theory. From the point of view of administration the result was messy. The whole issue of the piecemeal grants of privileges was the subject of discussion, and some frustraton, in treasury papers, when officials were attempting to make sense of the various claims submitted after the Union and demanding documentary evidence of the status and ownership of businesses claiming special dispensation.

A report was produced for treasurer Godolphin by the customs commissioners in North Britain on 5 February 1708, which nicely illustrated Scottish business acumen. It pointed out that the Scots had 'industriously' bought all the goods they wanted from abroad before ratification of the treaty, which had created great difficulty for the officials charged with ascertaining the true extent of the exemption claims. The report went on to set out the legal basis for the Scottish exemptions from taxes. It explained that there were two categories of exemption: those given in perpetuity, 'as the lead mines to the Duke of Queensberry and Earl of Hopetoun and the coals of the Lady Halket of Pitfirrane'; and:

> Such as are granted for a term of years to the manufactories, the chief of which now subsisting are the Woollen Manufactories at Glasgow, New Milns & Musselburgh; the Sugar Works & Rope Works at Glasgow & Leith; the several glass works in the Kingdom and three Soap works at Leith... [23]

It went on to detail the difficulties experienced by some manufacturers because of Dutch competition, and pointed out that 'others of course must desist when goods of the like fabric may be brought better & on easier terms from South Britain than those parts can afford'. The report concluded that it would be best 'to bring all the subjects of the united monarchy to as exact an equality as possible', suggesting that the most acceptable way to sugar the pill for the Scots was to order the Scottish privy council to:

> require all pretenders to exemptions to produce their claims within a time prefixed, in order to the consideration of the value of the reversions with the reasons for the continuance or dissolution of them. We think the people of this country may be most easily managed &

> most peaceably determined in the abridgement of their pretensions by the same authority in appearance which granted them such favourable & extensive concessions.[24]

The comment that if the Scottish manufacturers could not produce goods of equivalent quality and price to their English counterparts they must inevitably go to the wall is a pertinent one. Smout points out that, faced with English competition, the Scottish textile companies 'died without exception'.[25] In the case of the glass industry, there was no inherent reason why Scottish products should not equal their competitors, since the manpower came from the same pool of skilled labour that was employed in England, and most of the raw materials were imported. This is borne out by the fact that the three glassworks in existence at the time of the Union, in Glasgow, Morison's Haven and Leith, all survived the removal of their monopoly, which the English glassmakers were undoubtedly eager to exploit. Records of the Leith and Morison's Haven glassworks show that they experienced considerable difficulties, but these were not necessarily due primarily to the effects of the Act of Union, despite William Morison's special pleading.

Both the report mentioned above and other extant documents indicate that there was (not surprisingly) considerable confusion during the period of transition immediately after 1707, which both sides exploited to the best of their ability. Although the excise privileges granted by the Scottish parliament remained legally in place, at least for a time, some officials chose to ignore them, as two documents of 1708 in the Cromartie papers demonstrate. They show the proprietors of the Leith glassworks fighting to maintain their exemption from taxation and the quartering of soldiers on their property. In a representation to the lords of treasury and exchequer against the collector and stentmaster of the cess, they claimed that, having previously enjoyed their immunities 'of late they are not only cessed and stented alse weell for their manufactorie houses and trade But also quartered upon by way of common billating without regard to their priveledges.'[26]

James Cowan, collector of the cess in North Leith had argued that stent was due for the years 1704, 1705 and 1707, claiming that under acts of parliament in those years, only the manufactory at Newmilns remained exempt. (It is unclear to which Acts he referred). The response of Cromartie, Balfour, Blackwood and Ainslie, is also extant. Their counter-argument was, as before, a reiteration of the earlier acts granting privileges to manufactories. They pointed out that they were not claiming for any land, but only their 'workhouse and pertinents thereof', and that the local

manufactories of soap and cards (all in Leith) enjoyed the same rights.[27] The outcome of the conflict is not known.

The question of exemption from taxes had still not been resolved, in some cases, as much as twenty-two years later. A petition on behalf of the owners of the Glasgow soapworks in 1730 pointed out that they had been granted manufactory status under Scottish law before the Act of Union and 'that by the Treaty of Union All such Private Rights and Grants were Reserved to the respective proprietors theirof'.[28] It complained that the proprietors

> thought it a very great Hardship that since the commencement of the Union they were obleiged to give Bonds at the Custome House to pay the Dutys of their Pott ashes &c In case the Barons of Exchequer should finde by a sentence or Decree of Court that we have noe right or priviledge of Exemption from these Dutys.

They went on to say that they would never have agreed to such an arrangement unless they had been convinced that the matter would be speedily settled in their favour, complaining that a considerable sum was tied up in the bonds, which they would like released. However the petition has a pragmatic (and rather cheeky) ending: 'That if the Barrons of Exchequer think it reasonable for the equality of trade that his Majestie purchase these gifts and priviledges of the Manufactories we are willing to agree thereto upon a Reasonable Consideration.'

The soap manufacturers were not alone, either in their disputes with the tacksmen, or in maintaining their privileges long after the Union. Smout has described the long-running battle between the Scottish sugar producers and the tacksmen and exchequer during the last three decades of the seventeenth century. After the Union a further legal struggle lasted until 1728, when all the rights which had been granted to the sugar houses under Scottish law were nullified, although they did not have to pay the outstanding amounts due for 1707 to1722. After 1728 they were subject to the same excise payments and customs dues as English manufacturers but, by then, as Smout points out, the industry 'was strong enough to dispense with their former privileges without apparent prejudice'.[29]

The cases cited above imply that Scottish manufacturers took an essentially pragmatic approach to post-Union uncertainty about their tax position, continuing to operate under the terms of the Scottish Acts wherever they could and fighting to maintain

their privileges until forced to relinquish them. They gained considerable commercial advantage in the process. After all, a bond held by the treasury was not the same as the owners of the soapworks paying dues in cash, and a fifteen-year exemption for the sugar houses was a reasonable concession. Such minor matters are of little importance in the wider discussions about the merits or otherwise of the Union, but they were probably significant to the individual companies concerned.

The list of industries operating in Scotland at the time of the Union is small, but among the survivors of the open competition it heralded were those introduced into Scotland for the first time during the seventeenth century, under the acts specifically designed to encourage them (those criticised by Smout) - the sugar houses, soapworks and glassworks. Whatley has shown that the much larger and longer established Scottish salt industry survived after 1707 thanks, not to the newly extended external trade, but to the domestic market, which was consuming between two-thirds and three-quarters of production in the early eighteenth century.[30] Smout makes the same point about the sugar houses, which were situated in both Glasgow and Leith, and therefore able to supply the local markets.[31] He shows that John Corse, of the Easter House at Glasgow, kept a close eye on Dutch prices, ensuring that the domestic product remained competitive. Despite being of inferior quality to the Dutch, the Scottish product sold - as goods of lesser quality often do - provided the price is right.

The Scottish glass industry was very probably in a similar position. Details of customers are lacking, but most of the market in the early eighteenth century was almost certainly domestic. Despite the previous ban on imports, Newcastle was so close that it was a continual threat and prices on the east coast had always had to be in line with those in England. Once the prohibition on imports was removed, however, the products themselves had to be as good as those made in England - and only bottles were competitive on that score. They had to be strong, consistent, and generally fit for their purpose; no vintner or laird was going to transfer his expensive wine to fragile or unsuitable containers.

The glassworks were in a reasonably good position to cope with the changes, at least so far as their products were concerned. The glasshouse in Glasgow had been established from the first to manufacture bottles. At Morison's Haven, after failing to produce plate glass and other more ambitious items, the bulk of production was also bottles, especially after 1707. At Leith, window glass, hour-glasses and drinking

glasses had been made during the seventeenth century, but by the time the Swedish industrial spy Henry Kalmeter visited the works in 1719, he described it as a 'glassworck ... where they only make bottels, which are reckoned very good and strong'.[32]

It is clear that, so long as they stuck to bottle production, the Scottish manufacturers could survive in the open market. Although such limited ambitions did not produce artefacts to excite the glass historian, the pragmatic approach paid off. The industry survived and, although the immediate post-Union period was a difficult one, it eventually prospered, becoming a major player in the industrial expansion of the last half of the eighteenth century. Although the Morison's Haven glassworks closed in the 1720s, large numbers of bottles continued to be produced at Leith and Glasgow throughout the century. Glass-making may not have rivalled the sugar industry as 'the most important lasting creation of this seventeenth century movement to bring manufactories to Scotland',[33] but it surely deserves more recognition than it has received in the past.

[1] C. Whatley, 'The Economic Causes and Consequences of the Union of 1707: A Survey', *SHR*, lxviii (1989), 152.
[2] T.C. Smout, *Scottish Trade on the Eve of the Union* (Edinburgh, 1963), 17.
[3] *ibid*, 18.
[4] Whatley, 'Economic Causes', 151.
[5] *ibid*, 168.
[6] *ibid*, 168.
[7] Smout, *Scottish Trade*, 21.
[8] *ibid*, 22.
[9] *APS*, x, Appendix, 49a.
[10] Whatley, 'Economic Causes', 168.
[11] *ibid*, 174-5.
[12] W. H. Bowles, *History of the Vauxhall and Ratcliff Glass Houses and their Owners, 1670-1800* (privately printed, 1926), 20; Newman, *Dictionary of Glass*, 110; *Journal of the House of Commons*, xi.
[13] *Journal of the House of Commons*, xi, 368.
[14] *ibid*, 606, 607.
[15] *ibid*, 707-10.
[16] A further extract from their evidence has been discussed in chapter 2.
[17] *ibid*, 708.

[18] SRO, RH9/17/174, Petition of William Morison Esq. 22 Nov. 1714.

[19] see C.A.Whatley, 'Salt, Coal and the Union of 1707', *SHR*, lxvii (1987).

[20] P.H. Scott, *Andrew Fletcher and The Treaty of Union* (Edinburgh, 1994), 199.

[21] Scott, *Andrew Fletcher,* Appendix C, 233.

[22] *ibid*, 240.

[23] *Calendar of Treasury Books,* xxii, 121, quoting *Out Letters (North Britain)* i, 298, 302-05.

[24] *ibid.*

[25] T.C. Smout, 'The Early Scottish Sugar Houses, 1660-1720', *Economic History Review*, xiv (1961), 240.

[26] SRO, GD305/1/159/5.

[27] SRO, GD305/1/159/6.

[28] SRO, GD220/5/1132/6. Undated, but sent with a letter of 10 Feb. 1730 from John Graham of Douglas to Mungo Grahame of Guthrie.

[29] Smout, 'Sugar Houses', 247.

[30] Whatley, 'Salt, Coal and the Union of 1707', 30.

[31] Smout, 'Sugar Houses', 251.

[32] T.C. Smout (ed.), 'Extracts from the Journal of Henry Kalmeter's travels in Scotland 1719-20', SHS Miscellany 14 (1978), 24.

[33] Smout, 'Sugar Houses', 240.

CHAPTER 8

MORISON'S HAVEN: THE LATER PERIOD.

The final period of glassmaking at Morison's Haven is quite well documented from 1698 until the 1720s, under the ownership of William Morison of Prestongrange (1663-1739). An 'Act and Ratification in favors of the Glass Manufactory at Morisons haven' passed by the Scottish parliament on 1 September 1698 confirmed an act of the privy council of 27 April 1697, allowing William Morison to set up a glassworks at Morison's Haven, and granting him the privileges and immunities inherent in the status of 'manufactory'.[1] The act implies that the glassworks was already operational under Morison and his partners, and states that they were supplying bottles and 'severall other sorts and species of glasses which were never heretofore manufactured within this Kingdome such as mirror or looking glass plates coatch glasses moulded glasses and window glasses.' It goes on to say that the adventurers had built one glasshouse and furnaces and had brought from abroad expert workmen, maintaining them in the country for the previous two years 'or thereby' at great expense. Morison and his partners were, therefore, granted a monopoly of production of the items, other than bottles, listed above, for nine years 'unless that others shall set up and make the said species of glass within two years after the date hereof'. Importation of these items was prohibited after 'the first nine months nixt to come', provided the sale price and quality of the Morison's Haven wares were as good and cheap as those sold in London, or previously imported. Finally, the act stipulated that the privileges of the existing glass manufactory at Leith should not be prejudiced, and that 'the Lord Elcho haveing obtained an Act for his Glass Manufactory of the same tenor and date this present Act shall no wayes be prejudiciall thereto.' The act in favour of David Lord Elcho's glass manufactory at Wemyss was couched in the same terms, and included the same types of glass, as the one for Morison's Haven.

There is, in fact, another printed 'Act and Ratification in Favours of the Glass-Manufactory at Morisons Haven'[2], which pre-dates by three weeks the one published in the *Acts of the Parliament of Scotland* quoted above. It also differs from the published version in several minor details. Dated 5 August 1698, the list of wares produced, in addition to those already mentioned, included 'Spectacle Glasses' and 'Watch Glasses' and concluded that: 'some Samples has been shown to the Estates of Parliament'. No mention was made in this version of the glassworks at Leith or

Wemyss. The products were to be 'as good, or better, and as Cheap and Cheaper the foresaid Species of Glass, as has been Imported any time heretofore', London was not specifically mentioned. This version of the Act concluded that it:

> doth hereby grant to, and Endue the said Manufactory, with all the Priviledges, Immunities and Exemptions granted formerly to any other Manufactory within this Kingdom, and particularly to the Woolen Manufactory at *New milns*, within the same Shire of East *Lothian*, where the said Glass Work is Erected.

The parliamentary act was important to William Morison and his co-partners for the grant of the status of a manufactory, as well as for the conditional ban on imports and the rather limited protection from competition. A desire to encourage the manufacture of goods within Scotland, for the benefit of local employment, and a reduction in importation costs, had led to a series of protective and enabling measures being passed by the parliament and the privy council of Scotland throughout the seventeenth century, culminating in the major acts of 1661 and 1681, which were discussed in chapter two.[3]

The second act granting the Morison's Haven glassworks the status of a manufactory emphasised the manufacture of mirrors and coach glass, both of which were made of plate glass, as explained in chapter one. Certainly that was the intention and there is some evidence that it was indeed made during the period of the nine-year monopoly, although by 1705 rough plate glass was being imported and finished in Edinburgh, as discussed below. An excise bullion book from the end of the seventeenth century shows that no less than 20,700 pounds of barrilla were imported from Amsterdam to Morison's Haven in October 1700, indicating that high quality glass, in considerable quantities, was being produced at that time.[4] It is unclear what was meant by 'moulded' glasses in the 1698 act, as both drinking glasses and bottles were often blown into moulds. However, since bottles are also specifically mentioned, it is possible that Morison was keen to cover all possible types of production. While there is evidence that some drinking glasses were made at Morison's Haven, for most of the glasswork's existence bottles were the staple product. Bottles were, of course, the easiest glass item to produce, and had the most assured local market, as was illustrated by the inventories quoted in chapter one. Catherine Scott, in her thesis 'The Development of the Glass Industry on the Rivers Tyne and Wear', makes the point that the equipment for bottle houses was simple, coarse materials were cheap and

easily available and, although there was still keen demand for workmen, the skills required were less than those for making flat or flint glass.[5]

Before the records relating to the Morison's Haven glassworks are discussed, however, it is necessary to examine briefly material published by Fleming, and repeated by other writers. In his description of the Morison's Haven glassworks, Fleming states that William Morison employed 'Paul le Blanc', a mirror maker. He goes on to say that 'Le Blanc removed his workshop to Preston-Grange, whither he also took his family including his son Paul and William Scott, both expert mirror makers'.[6] He also mentions their application for exemption from tax on imported rough glass plates, which was opposed by Sarah Dalrymple. Fleming, as usual, based his information on Chambers *Domestic Annals of Scotland* and although the people certainly existed, many of the details are incorrect. It would seem worthwhile, therefore, to attempt to present a more accurate account.

William Scott, who described himself as a cabinet-maker,[7] was one of the more enterprising entrepreneurs at the end of the seventeenth century. He set up a number of businesses, the first in 1690, when he obtained a patent of monopoly to make cane chairs.[8] This was followed by a coach-making manufactory, for which he obtained privileges in 1693.[9] In 1695, he and his partners obtained the status of manufactory for a saw-mill at Leith, with a grant that no rival mill should be set up within a fifteen mile radius for nineteen years.[10] The Leith customs accounts show that in August 1696, he imported, free of duty, English window glass and 19 dozen 'plates and sights of glass' for his coach and chair work.[11]

An undated contract between 'Captain William Scott cabinet maker, glass grinder and burgess of Edinburgh' and Anna, Duchess of Buccleuch shows the extent to which Scott worked with glass. He agreed to 'cut as much French glass for panes, lozenges or squares as shall furnish all windows presently in the castle of Dalkeith, and fix them in frames thereof', before martinmas 1705. The Duchess was to provide all the materials.[12]

Scott was also in partnership with James Leblanc, a mirror-maker, the two men being described as 'Masters of the Glass Manufactories' in a dispute before parliament in 1705. James Leblanc was a French protestant, who made mirrors in a workshop in the Canongate, and had been admitted burgess and guild brother gratis, in Edinburgh, on 2 December 1698.[13] In a petition to parliament in 1705, Leblanc stated that he had

served in King William's army, at the conclusion of the peace being a lieutenant in the Duke of Atholl's regiment, and had married 'a gentlewoman of this countrey of good relations', whom he persuaded to sell their estate to Sir John Houston. He then:

> imployed the price thereof and his haill other stock and credite in erecting and setting up a glass work and bringing home expert artists for grinding, cutting, polishing & silvering all manner of glasses. And whyle there was any plate made in the kingdom [presumably at Morison's Haven] he wholly made use of the same and has advanced the polishing or finishing of mirrours & sconces of all kinds to the same perfection as in any other countrey.[14]

Leblanc claimed that he was employing 'many hands' and keeping within the country 'vast soums of money, in use to be exported'. The object of his petition was to be able to import rough plate glass, and other essential material, free of duty so long as there was no plate glass produced in Scotland.

Leblanc and Scott had a rival, however, in the person of Sarah Dalrymple, daughter of the deceased Charles Dalrymple 'last Keeper of the Registers of the Shire of Air', who lodged a petition to parliament in 1705.[15] She claimed to have perfected the 'art of making japan' and asked for power and warrant to enter into indentures with apprentices, and to prevent anyone trained by her from setting up on their own. She also requested permission to import finished mirrors and foreign japan free of duty.[16]

Her petition was vigourously opposed by Leblanc and Scott, who said that, not only was it directly contrary to the act of parliament relating to the glass manufactories, but that such imports would be detrimental to any future glassworks. Since they wanted themselves to import rough plate glass, they then set out to prove that 'there is a great difference betwixt the importing of rough and polished Glass':

> For the first sets a World of People to work at home, it being known and if need beis can be proven, that Mr. Le Blance and Scot has sometimes no less than twenty four Persons at work, in Grinding, Cutting, Polishing, and Silvering of Glass, which has cost great Charge, and long Labour to bring their work to this Perfection. 2. Rough Glass tho bought abroad does not cost the sixth part of the Rate of the finished ... so it would occasion the export of a Vast Deal of money.

Their main anxiety, though, was that if Sarah Dalrymple were able to import duty free foreign mirrors, too many people 'having an itch and desire after what comes from

abroad, tho no better than what is made amongst ourselves ... the whole Nation would be served by her, and so that Manufacturies of Mirror Glass ... will come to nought.' They endeavoured to pre-empt the counter-argument that William Scott had himself imported finished plate glass for his chairs and coaches duty free, by insisting that the circumstances were quite different, since there were many other japaners, but Scott had been the first in Scotland to make coaches and chairs, and that when he set up his business, no polished glass was obtainable in the country.

Sarah Dalrymple poured scorn on their arguments, saying she only wanted sufficient mirrors for her own use, she was not seeking a monopoly of japanning; there would still be 'place enough for Mrs. Le Blanc and Scot to inclose Mirrours finished by them'. She continued, with considerable irony, that, although they made

> a great noise of great numbers of People imployed ... and of a great Manufactorie, and great Charges, and long labour, to bring the same to perfection, all these are great stories, for this mightie Manufactorie employes two Prentices, and a Journey man, and is so far from being brought to perfection that there are several Diamond Cutts, that they are utterly incapable to cut, neither is there the least Vestige of Charges, or Labour in the matter, and indeed this pretence of a Manufactorie is better to cover the Importation of great quantities of finished Glass by Mrs. Le Blanc and Scot everie day, which is hoped they will not deny, and can be abundantly proven.

Whatever the truth, both sides appear to have continued in business. Some twenty years later, Sara Dalrymple supplied 'Baron Clark' at Penicuik with mirrors and sconces costing £65 16 0,[17] while in 1707 James Leblanc provided two glasses with glass slip for a chimney piece to the Earl of Breadalbane, for the price of £3 15 sterling.[18] William Morison was undoubtedly well aware of the demand for plate glass for mirrors, coach and chair windows and he clearly hoped to supply Scott and Leblanc. There is, however, no evidence of any partnership with either man, although he may have employed Leblanc at one time.[19]

William Morison had inherited the Prestongrange estate from his father, Alexander, on 31 December 1684, the instrument of sasine being registered in Edinburgh on 15 July 1685.[20] The baptism of William Morison, son of Sir Alexander Morison of Prestongrange, is recorded on 19 April 1663, one of the witnesses being John Jossie, bailie of Edinburgh.[21] He married twice, on both occasions clandestinely. On the first occasion, in 1677, he was just fourteen years old, while his bride Janet Rucheid was

only twelve. She was the daughter of Katherine Trotter and John Rucheid (Roughhead) of Craigleith, and niece of James Rucheid, the town clerk of Edinburgh. The wedding took place secretly in England, and was arranged by Katherine Trotter, in order to pre-empt the death-bed insertion in her recently deceased husband's will, that Janet should marry her cousin James, then aged nine, son of James Rucheid the town clerk.[22] The young couple began their married life facing a fine of 3,000 merks imposed by the privy council of Scotland, although £1,000 of it had to be paid by Janet's maternal grandfather the laird of Mortonhall, who had helped them.[23] Janet died in 1716.[24] They had eight children, four of whom died young.[25] The three daughters married well and took with them considerable tochers. The eldest, Katherine, married Lord Strathnever in 1705, with a dowry of 60,000 merks. They, in turn, had ten children, the second son, William, becoming 16th Earl of Sutherland.[26] In 1707 William Morison's third daughter Helenor, married John, 2nd Earl of Glasgow, her dowry also being 60,000 merks.[27] His second daughter Jean married John, 5th Viscount of Arbuthnott in 1710 or 1711, despite the disapproval of his family, the amount of her tocher, finally agreed at 50,000 merks, being the subject of an inter-family dispute.[28]

In 1718, William Morison married for the second time, again a somewhat unconventional event, graphically described in a letter to the manager of the glassworks. His bride was 'the daughter of Sir John Jermayn (by one who calls herself Mrs. Jermayne) own'd generally to be the bastard of Sir John Jermayne.'[29] The letter alleged that the new Mrs. Morison had been apprenticed to a 'cheyna house', but was thought to be the likely heiress to the £8000 fortune of her unmarried uncle, a sea captain 'much more mentioned for his substance than his valour'. William Morison met her through the auspices of a matchmaker, courted her in secret, and married her without the knowledge of his heirs. Shortly afterwards the wealthy uncle married and had a son 'although it was insinuated the Capt wou'd never marry, and that if he did he cou'd not have any children, which seems to me an uncertain presumption when women who can bear children may have them, whether the husbands pipe is in tune or no.' The writer of this gossipy letter clearly regarded William Morison as foolish and gullible, to put it mildly. The event does, perhaps, illustrate his constant need for cash, and could imply rather poor judgement, but a letter from Morison's grandson, the Earl of Sutherland, written some seventeen years later, appears to vindicate his choice. He wrote: 'I don't doubt but your lady and her relations will get you out of your difficultys, being you are so very fond of that family'.[30]

William Morison had a lengthy parliamentary career. He was a commissioner to the Scottish parliament from 1690 to 1702 for Haddington Constabulary, and from 1703 to 1707 he represented Peebleshire.[31] He was one of the Scottish commissioners sent to London to negotiate the Treaty of Union, and after 1707 continued to represent Peebleshire at the British parliament until 1714.[32] In 1707 he was appointed to the privy council of Scotland.[33] Morison was a self-avowed ardent supporter of the Protestant succession, claiming that he had suffered financial hardship as a result of refusing to provide coal to the 'enemy' during the siege of the Bass Rock, and by raising and maintaining, with others, a regiment for King William's service.[34] In a petition to the Lords Commissioners of His Majesty's Treasury dated 22 November 1714, Morison also claimed that, after the Act of Parliament of 1698 in favour of his glass manufactory, he 'was at vast charges in erecting the same and before the Union of the two Kingdoms made very considerable profit thereby which by the Union is rendered ineffectuall.' He went on to assert that he had laid aside 'all consideration of his own losses' in order to support the Protestant succession, despite being 'very sensible that the Union would not only destroy the said manufactory but also bring him under a tax of £1300 a year as a considerable salt master.' He ended the petition by requesting 'relief for the damage which your petitioner suffers by a treaty that has been so happy in its consequences to these kingdoms.'[35] Whatever the truth of his plea, the operation of his glassworks was erratic and its profitability very variable after 1707, although some of the problems appear to have been due, at least in part, to his own mismanagement, as this chapter will attempt to demonstrate. By 1707, of course, Morison's nine-year privileges had run their course, and since his glass business relied on local markets, he had nothing to gain, and potentially much to lose, by the freeing of trade with England.

Frequent recourse to litigation appears to have been a feature of Morison's life, as it was for many of his contemporaries, and it is from legal documents that much of the material relating to the glassworks is drawn. One long-running dispute ended in the House of Lords in 1719.[36] The case is also summarised in the extracted decreets of the Court of Sessions and many of the warrants are extant. Together they provide a useful insight into the pre-Union years of the Morison's Haven glassworks.

The original agreement of co-partnership, which was signed between 18 and 30 March 1698, shows that having built and set up the glassworks himself, William Morison then formed a co-partnership with other local people to rent and run the

whole concern. The occupations of the partners provide an interesting insight into the range of men owning sufficient surplus capital to risk becoming involved in such a venture at the close of the seventeenth century. The signatories were:

William Morison
Sir William Binning
Patrick Steill, vintner, Edinburgh
George Livingstone, 'taylier'
John Mathie, skipper
Daniel Tittery [glassmaker]
Peter Simpson, 'slatter', burgess in Cannongate
Gideon Eliot, chirurgeon apothecary[37]
Janet Trotter, Lady Craigleith
James Smith of Whitehill
David Burton, glazier
George Livingstone, wright
Alexander Smith
Edward Hawkes [glassmaker]
William Monypenny, advocat

Each co-partner committed himself to a £50 sterling share. George Livingstone (probably the wright) was named as cashier, and one of their number was to be appointed overseer. Smith, Burton and Livingstone were all burgesses of Edinburgh.

The co-partnership agreed to take a tack of the glasshouses and the village of Morison's Haven comprising:

> the whole dwelling houses, vaults, two girnels and the Ducat Girnell (excepting the Dow house alleanderly above it) Milns ... and that Aiker of ground lyand without the park dyke which belongs to the said Milns, and likewise the Oven, Maltkiln, Barn, and Harbour with the park and that piece of ground next the Ducat and the Glasshouse furnished and completed that is Windtight and Wattertight And also the liberty of fishing with the Boats and Netts and of Brewing, selling vending and ?tapeing Ale, Bear and all sorts of liquers and of selling all kindes of merchand goods as freely as he [William Morison] might have done himself before the setting of these presents... [38] (Fig.24)

William Morison agreed only to carry on any trade as a co-partner, with the exception of his coal and salt works and the agricultural produce of his estate. He assigned to the company the rights granted to him by the act of the privy council, and to an agreement he had made with Alexander Henderson, portioner in Morison's Haven, who owned some of the houses and yards there. The tack was extensive, and appears

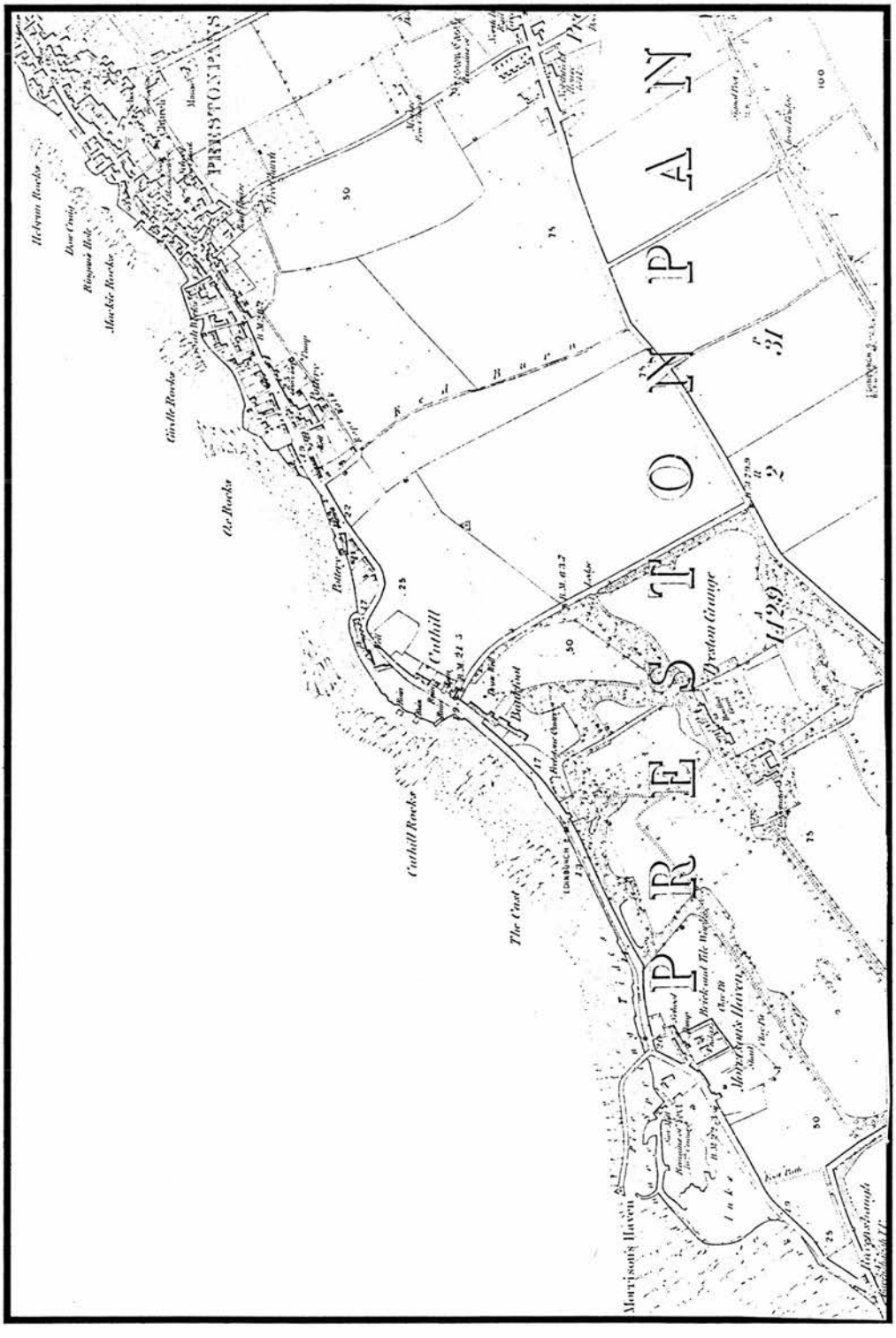


Fig.24. Morison's Haven and Prestonpans. (OS 6", Haddingtonshire, 1854. Courtesy NLS)

to have included the whole park of Prestongrange, bounded by dykes on the south and west, a dyke and the highway on the east, and the sea on the north. It was to start on Whitsunday 1698 for the usual 'three nineteen years', for a rental of 1,000 merks annually, plus 200 merks from their yearly profit. William Morison was to be exempt from shore dues, and he offered to waive his rights to the 200 merks if they were put towards the repair of the harbour. The partnership had permission 'to win what clay and sand may be proper for the glasswork', provided they paid the costs and made good any damage.

A month later, and clearly part of a pre-arranged plan, there was a further agreement between the co-partners and one of their number, a glassmaker from Newcastle, Daniel Tittery, and his two sons, Daniel younger, and Nathaniel.[39] In a contract dated 28 and 29 April 1698, the co-partners set in tack:

> the glass house with the furnaces working tools and others, conform to ane inventar to be subscribed ... and reserving alwayes to the said copartnery the little furnace in the said glass house called the collcall[?] house for makeing of mirrere glass and others together with sufficient ware houses for holding of all sort of materialls and requisites and necessar for the said glasswork and glass and bottles that should be made thereof ...[40]

This second tack was also to start on Whitsunday 1698, and was to run for nine years, ending on 5 September 1707. The co-partners were to advance to Daniel Tittery £500 sterling, under the supervision of someone to be appointed by them, to be used for 'furnishing and buying all sort of materials for makeing of broad window glass and glass bottles in the said manufactory' and for paying the workmens' wages. Daniel Tittery was to have a house, brew house, stable, coal cellar and yard, with two fishing boats, 'with freedome and leave to keep any sallary there for brewing and vending ale bear and all other liquers ...' For the first year it was to be rent free, after that he was to pay £25 a year.

The Titterys agreed to make 'as good and sufficient broad window glass and glass bottles as any that were made in Newcastle', to pack the window glass into chests for sale and deposit them in the warehouse. They were to pay to the co-partnership

'twenty pound sterling and yearly profit for each one hundred pound sterling of the said five hundred pound sterling so to have been advanced ...' so long as any of the £500 should remain outstanding, or the debt could be paid in bottles or window glass. The glass products were to be offered for sale under the supervision of the company and the proceeds were to be used to repay the inital £500 and the twenty per cent interest.

It is not clear why Daniel Tittery and his sons should have taken a share in, and tack of, a Scottish glasshouse, but obtaining their services must have been of considerable importance in attracting venture capital. The fact that they were to make broad glass, which, when of high quality and made very thick, could be ground and polished to form plate glass, confirms Morison's intention to make mirrors, but nothing in the extant records explains why the little furnace was kept apart from the Tittery's tack. It is possible that the co-partners had a separate agreement for the supply of plate glass, for which they paid as required, but that must remain speculation at present.

In 1699, William Morison began buying back some of the shares in the co-partnership. On 8 August, Morison, William Monypenny and Gideon Elliott borrowed £300 sterling, on their conjunct personal bond, from the newly established Bank of Scotland.[41] On 5 September, Sir William Binning and Patrick Steill renounced their shares in the glassworks and on 21 October, Gideon Eliot followed suit. Morison agreed to pay each of them £10 sterling a year during the term of the Tittery's lease and to clear any remainder when the lease expired.

Two other shareholders, who later instigated the legal proceedings from which this information has been obtained, paid into the co-partnership more than the £50 sterling agreed; David Burton paying a total of £76 sterling, while James Smith of Whitehill paid £100 (the co-partnership is described as consisting of sixteen shares, but there are only fifteen signatories, so perhaps Smith bought two). They resigned their shares in favour of William Morison 21 October 1699, on the same terms as the other former shareholders.[42] Morison eventually also took over the three shares (see page 228) of Lady Craigleith (his mother-in-law) after her death.

George Livingstone, the treasurer, prepared a balance sheet on 6 September 1699, which showed a deficit at that point of £1,275 16 8 Scots from a total budget of £18,934 16 8.[43] His statement actually shows the cost of the sixteen original shares to have been £76 sterlings each, in contrast to the £50 stated in the extant agreement.

Among the credit entries are cash received from the bank £1,333 6 8 and 'cash received from Mr. Lasagette to acct of glass delivered to him £168'. There is a brief mention elsewhere in the legal summary of a contract between the company and Mr. Leblanc and Mr. Lasagette, who were almost certainly partners in the Edinburgh firm of mirror manufacturers discussed above. This would, therefore, appear to confirm that plate glass was being made in the early years.

The debit entries of Livingstone's accounts also contain some relevant information, including the acquisition of Alexander Smith's and Peter Simpson's shares, which were bought by Lady Craigleith, who also borrowed from the company. Coal for 'the use of Daniel Tittory and Ed. Hawkes' was bought from Falsyde (inland from Prestonpans, see Fig.18) and Prestongrange, the bill for five months in 1698 amounting to £160. The accounts were countersigned by John Brown, clerk to the company.

In addition to the balance sheet in the Court of Session papers, on 16 December 1701, a three page list of the expenses of the glassworks during 1698 and 99 was entered in the register of deeds.[44] This account is also dated 6 September 1699, and was originally made to accompany the balance sheet mentioned above, since the total expenditure of £17,236 17 2 Scots is listed there. It was audited and signed by William Morison, John Brown and George Livingstone, one of the witnesses being Robert Jossy, son of John Jossy of Westpans. By far the largest item of expenditure was a total of £4,166 4 0 for timber, while two thousand bricks cost £28. This must imply that, while the furnace was of brick contruction, the 'hovel' sheltering the whole working area, was of timber. Livingstone's account covers everything from 'dinner at Morison's Haven £11 11 0' and frequent charges by the 'Cross Keys', to a quair of paper and books for the clerk. Edward Hawks appears to have been one of the glassblowers, since a delivery of barilla was divided between him and Tittory. He features on a number of occasions in the account, the most intriguing items being entries suggesting that he had been working in Kirkcaldy: 'to Starbie for goeing over twice to Kirkcaldy for Hawks tools £3; to Le Blanc when he went over for Hawks goods £6; and finally, 'for makeing Mr. Hawks Coffine pr recept £25'. There is also an entry: 'To instrumenting Baillie Reston at the Wemyss to give up the ashes £10 12 0'. The accounts were agreed by the auditors, except for two items: £150 paid to Collector Seaton, and clothes for Jacob Visitella and Thomas Sweet, costing a total of £78 3 0.

Until roughly the end of 1699, according to witness statements, it appears that, with John Brown acting as clerk, decisions about the management of the glassworks were made by shareholders at sederunts under different chairmen, with George Livingstone acting as treasurer. However, after taking over half the shares in the company, William Morison appointed James Smith, described as 'Clark of the Barronie of Prestoun', to be 'principle Clark Inspector Overseer & accomptant of the manufactory att Morison's Haven for glasswork and of all my coall workes & saltworks', in a contract registered at the commisary court in Edinburgh on 1 March 1700.[45] Smith was contracted to take overall responsibility for supervising the grieves and other employees, inspecting their accounts, collecting debts and hiring and firing workmen, acting at all times as Morison would himself. All the proceeds were to go to Morison, who, to all intents and purposes, had taken over the running of the glassworks.

The prolonged legal dispute mentioned above, concerned William Morison's alleged failure to pay the annual sum of £10 sterling to former shareholders David Burton and James Smith, as he had agreed. William Morison strongly denied having agreed to buy David Burton's share and that he had taken over the management of the glassworks for his own benefit in 1700. Burton, Smith *et al* brought their case before the Edinburgh sheriff court in 1700, and judgement was made against Morison. However, he appealed against it on several occasions and the case dragged on until the final arbiters, the House of Lords, again found against him on 8 April 1719 and he was, once more, ordered to pay up together with £20 costs.[46]

It was alleged at the end of 1700, that the Morison's Haven glassworks had failed to produce the wares listed in the 1698 Act for more than a short period. In a petition of 12 November 1700, James Montgomery younger, merchant in Glasgow, and his partners, set out the case for granting them the right to set up a glassworks and soapworks in Glasgow, citing among other reasons that;

> Preston-Grange hath clearly failed as to the foresaid condition [that of supplying glass as good and cheap as in London], it being notour, that he neither hath furnished the Kingdom with as good and as cheap: nor indeed hath or can furnish it at all, and as to the insufficiency of his glass, it is notourly known specially as to his Mirrors and Watch-Glass.

The petition goes on to cite accompanying statements, one from the glaziers, another from 'these that deal in drinkinge glasses', and a third from 'Scot, who deals in mirror and watch-glasses', all taken within the previous six months, 'whereby it plainly appears, that Preston-Grange could not furnish them at all, having indeed none of the saids glasses for their use and service.'[47] Montgomery was, of course, making the case in his own favour and cannot, therefore, be regarded as objective, although there may be at least some truth in his allegations. The petition ended with the statement that Prestongrange 'neither has performed nor can perform in the terms of his Act, or in effect hath done any thing to good purpose, his work, as is informed, being also deserted and never like to thrive in his manadgement.' The granting of Montgomery's petition will be discussed in chapter eleven.

One of the Court of Session witnesses in the dispute with the former shareholders, whose signed depositions still exist, was Robert Liptrax (Liptrop) aged 32, a glassmaker, whose name will appear again later in this chapter. He stated that after 1700, he sometimes received his wages from Prestongrange, sometimes from James Smith or Alexander Herriot, both clerks, and that the latter was responsible for selling the glass. Listed among the items held at the court, but not now among the warrants, is a paper, mentioned by Liptrax, giving William Morison's consent for him and Jacob Visitall, with their boys and servants, to go to Leith 'and use their calling and trade in makeing of bottles only in that manufactory'.[48] Liptwax had requested such permission because the fire was out at Morison's Haven, so there was no work for them there. The permission is dated 19 August 1707, a few weeks before Daniel Tittory's tack was due to expire.

The reference to Jacob Visitell is of particular interest. It has been shown in chapter five that Cornelius Visitella, glassmaker, stayed with Sir James Hope of Craighall in 1647 and gave him an estimate of the costs of setting up a glassworks at 'the Pans'. Cornelius Visitella had remained in the area, with his servitor, after the departure of the other Italians from the first glassworks at Morison's Haven, probably in 1646, while his son, Jacob, was, in 1662, making glass at Westpans, under licence to Charles Hay. Clearly, he, too, had remained in the vicinity, but it seems probable that the Jacob who was working at Morison's Haven in 1707 was actually a third generation Visitella, since glassmaking was an arduous occupation, and a working life of over forty-five years seems rather long.[49]

Material in the admiralty court records indicate that other local people took shares in the glassworks during the period of Tittery's lease, and give some indication of the wares being produced. In 1706 William Morison took action against Gilbert Campbell, merchant in Edinburgh, and Francis Russell druggist, (of whom more later) described as co-partners in the glassworks, for money owed for coal and kelp supplied by them at the request of Thomas (*sic*) Smith 'master and overseer to the glasswork at Morison's Haven'.[50] Morison showed that he had supplied five tons of kelp and 576 carts of coal to Smith and that Campbell and Russel were liable for payment. In addition to the kelp, which provided the potash required to produce bottles, two loads of wood ashes, and some 'soap ashes and light ashes', amounting to a total of 219 tons, were also imported for use at the glassworks in 1706.[51]

The papers also show that Thomas Smith had supplied Campbell and Russell with 'six gross and five dozen of viall glasses and eleven dozen and eight chopin botells' on 20 February 1704, and a further two gross of vials, fourteen dozen and ten chopin bottles, four dozen and four pint bottles, and twenty four dozen tumblers, on 18 February the same year. This is significant as the only known reference to drinking glasses being made at Morison's Haven.

Equally interesting is a list of the bottles supplied during 1704 and 1705. It includes quart, pint, chopin and mutchkin bottles supplied to 'my lady' (presumably Lady Craigleith), William Murray, merchant, Alexander Hay, vintner, and, on 13 October 1705, '10 dozen and 8 marked chopin bottles, & 12 dozen and 8 marked mutchkin bottles. Mr. Bruce later bought four dozen and nine plain chopin bottles. This reference to *marked* bottles, and another to be mentioned later, provides evidence that the Morison's Haven glassworks was supplying sealed bottles to their customers.

By 1708 there had been a considerable change at the glassworks, and there are numerous documents relating to the chequered history of the next few years among the papers of David Fearn, a well-known Edinburgh writer to the signet, and at one time part-owner of the *Scots Post-man*.[52] Despite providing much useful information, the papers also pose problems in that many are rough drafts, unsigned, often undated and frequently duplicated, and some are in very poor condition. David Fearn acted for William Morison from about 1710 for a number of years, reluctantly becoming his bailie at Prestongrange for five years, while Morison was in London, and thereby creating for himself 'a laberinth of trouble', for which he was never recompensed.

Fearn summarised his dealings with William Morison, whom he met in London in 1688, in a memorial dated 1730, in which he claimed he was owed £50 st. for his work at Prestongrange, and £513 12 0 Scots for money he had been forced to borrow while in Morison's service.[53] The memorial again points to Morison's reluctance, or inability, over a long period of time, to pay his debts.

The first dated document in the Fearn archive is an 'account of what ashes & the [?] Andrew Hutchinson glass maker had at Morisons-haven the time he did contract with Clerk & Russell' of 16 July 1708.[54] Andrew Hutchinson is described in Fearn's memorial as an Englishman, who had a tack of the glassworks, described elsewhere as being for thirteen years, but no starting date is given. He appears to have been a man of many parts, not only describing himself as a 'master of the airt and mystrie of all sorts and manner of glass makeing',[55] but in an unrelated contract as 'Andrew Hutchinson of London Cloathworker, arts master to her Majestie Queen Ann now Tacksman ... of the glasswork at Morisons Haven, and operative in glass and glazed ware..'[56] His reason for coming to Scotland is unknown.[57]

Whatever brought Hutchinson to Morison's Haven, it was not long before he fell foul of Scots law. In 1711 David Fearn was asked by William Morison to help Hutchinson, as he was subject to three captions of horning, one of which had been instigated by Alexander Ainslie of the Leith glassworks.[58] At Morison's request, Fearn hired a room in which Hutchinson could take refuge and dealt with his creditors, leaving behind him numerous papers dealing with the episode. These will be discussed in some detail, in chronological sequence. They are significant in that they confirm that the original glassworks was a large one, consisting of two furnaces, described again as large and small, which, when running at capacity, would have been capable of a considerable output. Both furnaces appear to have been in a state of disrepair by 1708, and it is unclear whether, during the ensuing fourteen years of certain operation, they functioned simultaneously. Although the operation of the glassworks was dogged by disagreements and mismanagement, it does appear to have been in production for most of that time, and to have retained a workforce of some sort.

There are several drafts within the Fearn archive containing details of the events leading up to Hutchinson's financial difficulties, one of which appears to be in his own words. Labelled 'Petition', the document describes, with more than usually eccentric spelling, how Prestongrange needed someone to carry on his glassworks 'as he had in former times'. He had engaged a Thomas Smith who, 'being a bottel maker only', had

no experience as a founder, or maker of metal, although he could produce a batch when everything was straightforward, he 'has no other knolige'.[59] Hutchinson claimed that he was recommended to Prestongrange and was involved in negotations for a year, but did not want to agree to take over until he had seen the works, which he had been told were valued at £100 sterling a year, but when he came to the premises 'I found only a heape of rubbish'.

Nevertheless he entered into a tack, and operated 'the bigg furnes ... which went on verey well for proffet untill the sayde Prestongrainge his coale was oute then the work was forst to stop for aboute three months'. Such a stoppage was a serious matter because, as Hutchinson explained, he still had to pay his team of glassmakers, even if they were idle, the cost on this occasion having been £72 (presumably sterling). He could not carry on a large work 'meting with these difficoltes' on his own and applied to Mr. Francis Russell, a druggist in Edinburgh, who, with a merchant there, Alexander Clerk of Glendorch, agreed to provide capital for the glassworks 'that the glass manufactorey with a thousand pounds stock might furnish this part of north britain to prevent the English bottels to be brought in', Hutchinson having a workforce capable of such an undertaking. There is no mention in the Fearn papers of Francis Russell's earlier involvement with the glassworks. Nor is the Leith glassworks referred to in the documents, although it was operating throughout the duration of the Morison's Haven works.

An agreement between Clerk, Russell, and Andrew Hutchinson, was signed at Edinburgh on 26 August 1709.[60] This stated that Hutchinson had taken a tack of the glassworks at Morison's Haven, (described in another paper as being for thirteen years from 18 August 1709), and that Clerk and Russell would advance £25 st. for repairing the office houses and the large glass furnace and provide Hutchinson with money or credit to buy a stock of ashes and other materials, to the value of £100 st. The agreement bound them to provide further capital 'from time to time as is necessar for carrying on the work ... not exceeding the sd soume of one hundred pounds sterling at a time', and to advance £6 st. a week to pay the workmen while the big furnace was operating. They also agreed to take all the bottles and vials made at the works at listed prices. These were:

> [four?] pint bottles at two shillings and eight pence sterling per dozen
> chopin bottles at sixteen pence per dozen
> mutchkin bottles at twelve pence per dozen
> half mutchkins at ten pence per dozen

> all glasses of all sorts and sizes at three shillings & sixpence sterling per gross

Hutchinson was also free to make 'whatever other glasses [he] ... has materialls to work and the sd Alexander Clerk and Francis Russell shall think needfull', to be sold as cheaply as the wholesale price in South Britain. Hutchinson was to allow them 'twenty per cent of their advance and prompt payment', while they were to account for the bottles every six months and to pay to Hutchinson any balance due after deduction of their weekly advances. While the big furnace was operating, each bottle should weigh

> ane pound ten ounces of good and sufficient metall in every way well finished garbled [selected] and sorted in three sorts viz. the larger measure the exact measure and short measure all delivered in separatly and the pynt bottles & others which all make to be delivered in the same manner.

The rest of the agreement is missing, but there are other papers in the Fearn archive which reiterate the terms outlined above, and add more details. In a list of items required for the arbitrators of the subsequent dispute, the contract between Clerk, Russell and Hutchinson is said to have been for five years. In another paper, Hutchinson claims to have agreed to deliver to Leith, Edinburgh or anywhere within six miles of the glassworks, at least 300 dozen chopin bottles every week while the big furnace was going.[61]

Although the furnace appears to have ceased to function before Hutchinson took over the lease, glass-making materials were still *in situ*, presumably left there by Daniel Tittery, and were bought by him from William Morison. They are listed as follows:

Soapey ashes 160 Tunn at 14s. per Tun	112 00 00
Light Wood Ashes 300 Bushels at 9d.	14 5 00
Kelp 10 Tunne at [???] pr. [?]	16 5 00
Asnech [?arsenic] 250 pounds at 6s pr [?]	7 10 00
Manganese & other ingredieance from London	13 7 00
Working tooles and convenience	137 00 00
Red led 66 1/4 at 14s. pr C	4 7 6
Burily [?barilla] on the place not used to [?]	150 00 00
Broken glass & [?cullet] mettle about the house	100 00 00
Sifting of ashes of former [?] dugg up an in the yeard 100 tunn at 10s.	50 00 00[62]

The large quantities of soaper's ash (a form of potash left over after the soap-making process, often used in bottle-making) and kelp, confirm that bottles had been the main product. However, arsenic and manganese were used as de-colourisers in finer glass and the presence of £150 of barilla also confirms the production of the better quality glass required for tumblers and vials. According to another note by Andrew Hutchinson, Francis Russell and Alexander Clerk agreed to lay in the following stock:

Ashes value	200 00 00
Kelp value	20 00 00
Iron and clay value	30 00 00
Saltpeter value	150 00 00
Lethrige value	19 00 00
?Bureled do	50 00 00
	469 00 00[63]

Hutchinson calculated the maximum cost of coal and the ingredients for the batch to be £20 a week. He also gave estimates of the amount of glass which could have been produced but appears to have worked on the basis of a fifty-two week year which, although obviously designed to maximise his loss for the benefit of the arbitrators, is a very dubious assumption, since no glass furnace could work for a year non-stop. Indeed no furnace was expected to last that long before needing structural repairs. Hutchinson also claimed that his aim was to work the two furnaces simultaneously, which would increase profitability.

Things appear to have gone wrong fairly rapidly, culminating in the captions of horning against Andrew Hutchinson and a complete breakdown of the co-partnership. Among the complaints lodged by Hutchinson against Clerk and Russell were that they failed to provide enough money to stock the glassworks with ashes, a component of the batch without which he could not operate; that they did not provide sufficient money to complete the necessary repairs; and that they interfered with his management of the glassworks. Hutchinson was so desperate for cash at one point that he entered into another agreement with a Theodore Marine in June 1710, granting him a quarter share in the co-partnership.[64] It seems that the original partners had also wanted another injection of capital, since in a deed of 27 May 1710 they admitted Alexander Herriot, merchant in Edinburgh (already mentioned as purchaser of bottles made at Morison's Haven in 1705) to the co-partnership, for

payment of a mere £20 sterling. This deed also confirms that there were actually three original partners - William Menzies of Gladstanes being named as the third.[65]

Hutchinson provided Fearn with lists of the workmen employed at Morison's Haven and their wages. He claimed that, before the agreement with Clerk and Russell, William Morison 'did send a set of workmen from London which was with oute my order & derection'.[66] Since the furnace was not working, and he had to pay the men £3 st. a week, he went to Glasgow and found employment for them there 'which I did agree for to be pd 6d for 22 bottels which is a glass makers dozen'. He also became a 'quarter partner ... of the work'.

This does not, however, appear to be the whole story, since a note added to a memorial states:

> Note that Mr. Hutchinson had two setts of workmen [?] before his little ffurness went to work the latter end of December 1709 his workmen were all imployed at Glasgow which worke he was master off and designed to carrie on, which was an advantage to his work at Morison's Haven, which had no stock ... he had designed to carrie on both the works till such time that a sufficient stock of materialls should be laid in at Morisons Haven, yett Mr. Francis Russell went to Glasgow & fforced all the forsd workmen away against the will of the owners of the Glasgow glasswork, to the great loss of Andrew Hutchinson and ruin of his work.[67]

Hutchinson provided lists of the workmen. Those 'forced' from Glasgow, he names as Michel Stringer, the head of the team, Rob Colney, James Love, James Colney, Isaac Colnoy and Rob Spence. The name Colney is of particular interest, since glassmakers called Emanuel and James Culney had been summoned before the English privy council in 1626, during a dispute between Sir Robert Mansell and Sir William Clavell.[68] They were members of the Colnet family, one of the best known Flemish glass-making families, whose involvement with the industry can be traced back to 1378 at Chimay, an area now on the Belgian side of the present border with France. They inter-married with other leading glass-making families and owned numerous furnaces in Belgium and France until the early seventeenth century, when their industry declined 'and a number of masters emigrated overseas'.[69] A descendant of the family, John Colnett, has already been mentioned in connection with the development of the 'English' bottle. Of the three Colneys listed above, however, only one, Rob, was

paid the rate for a 'finisher' (bottle maker), ten shillings sterling a week. James Colney was paid seven shillings, probably as a blower, while Isaac received only five shillings.

Isaac's pay is something of a puzzle, because he (or someone of the same name) had been to Scotland before and on that occasion had claimed to have possessed a particularly desirable skill. In the Scottish parliamentary papers is a 'Petition of Isaac Culney Glassworkman for himself and in behalf of William Hynd his Prentice now Prisoners in the Tolbooth of Edinburgh', dated 18 August 1703.[70] The petition describes how Isaac Culney had been under indentures to a Mr. Sawyer, master of a glasshouse at 'Foxhall' [Vauxhall] in Surrey, who had ceased working and transferred him to another glasshouse. Culney claimed to 'having a certain secret in the making of big glasses beyond any other man of his calling in England', which Mr. Sawyer had allowed him to protect by working in a private room. His new employers wanted him to work in their sight 'threatning to extinguish their fire and to come upon your petitioner for damages' if he refused, at which point Culney decided to abscond. He met a man called Benson, the former clerk to Mr. Sawyer, who was intending to come to Scotland, and who offered to pay the travelling expenses of Culney and his apprentice 'as not doubting of getting encouragement in his art here, to which your petitioner very readily assented as being formerly invited to work in a glass house here'. Unfortunately they were arrested shortly after their arrival on a charge of running away with money, books and papers belonging to Mr. Sawyer. Culney pleaded that he could neither read nor write, but that Benson, who had contrived to escape, had previously been in charge of the missing items. This case provides further evidence of ongoing recruitment of glassmakers in London.[71]

The list of Andrew Hutchinson's workmen gives more details of the manpower required and their rates of pay:

Thomas Smith	£1 0 0 (sterling)	
John Tomson	10 0	
James Brass	10 0	
2 boyes	4 0	
A packer	3 0	
To tesors [furnace men]	12 0	
To ashburners	10 0	
One corkerman [?caulkerman]	5 0	
A caneman	5 0	
A spare man	4 0	
myself	1 17 0	total £6 0 0

In addition to these lists, Hutchinson has added 'Rob Liptrot his waiges as has ben useless to the work' £36, and 'James Thomson paid waiges & no use for him' £10. Both these 'useless' gentlemen will be mentioned below. The reason for the provision of such details was Hutchinson's claim that he had to pay the wages of all the glassmakers, whether they worked or not, and since the furnace was idle for several months, through no fault of his, he should be recompensed by Clerk and Russell. It was customary for bound glassworkers to be paid 'dead' or 'play' wages, at half the normal rate, when the glass furnace was not operating, for whatever reason. Some insight into the dilemma of whether to bind the workmen, and be liable for high costs if there were problems with the furnace, or not to bind them and risk their defection to a rival glassworks, is given in the correspondence of Newcastle glass manufacturer John Delavel, some seventy years later.[72] In a business which was dependent on a limited pool of skilled workmen, the decision was a difficult one, particularly when cash flow was a constant problem, as it clearly was at Morison's Haven.

At one point in this sorry saga, Andrew Hutchinson appears to have lost control of the management of the glassworks. He complained that Clerk and Russell did not trust him and listened to 'false and idle reports, of some envyeous and spitefull workemen (who never matters what mischief they cause for their own ends)'.[73] They appear to have placed James Thomson in charge and to have ordered that work should start on repairing the large furnace, against the wishes of Andrew Hutchinson, 'which occasioned all the servants in and about the sd glass house to ly idle for four monthes till the sd furnace was gott in a working condition by the said Mr. Hutchinson as maister', leaving him to pay the dead wages.[74]

In addition to the difficulties caused by the conflicts between Andrew Hutchinson and Clerk and Russell, the works at Morison's Haven appear to have been affected at one point by the defection of part of the workforce, since one of Fearn's papers refers to the action of the undertakers against Mr. Dick, merchant in Edinburgh, 'who by advice of one Degneay [Dagnia] at Newcastle first invyted severall workemen from the glasswork of morisonhaven, which stopt the said worke considerablie'.[75] The Dagnia family were leading Newcastle glassmakers, who founded their first glasshouse there in 1684.[76] They were almost certainly the sons of Edward Dagnia, who had worked with Jacob Visitella at Westpans, and for Robert Paip at Leith in 1664. The poaching of workmen, so much a feature of the Mansell era, continued

until the late eighteenth century, and will recur on a number of occasions in the affairs of the Scottish glassworks.

By 1711 matters had come to a head, the glassworks had closed down, Andrew Hutchinson was in hiding, and David Fearn was trying to sort things out in the best interests of all concerned, which meant finding a means of continuing to operate the glassworks, in order to generate income. Fearn's papers include a proposal from Andrew Hutchinson that arbitrators should be appointed in order to resolve the difficulties, and that while the arbitration was in process he should be allowed to re-open the glassworks, 'seeing there are workmen who ly now at great charges and idle would carry on the work who otherwayes may be gone and so the works lost.'[77] Four abitrators were duly appointed.

Fortunately, alternative financial backing for Andrew Hutchinson was forthcoming from a fellow Englishman, John Scarlett a London merchant, who in 1711 was trustee and manager of the duck sail manufactory at Leith.[78] There are two unsigned and undated drafts of agreement between Hutchinson and the undertakers, the gist of which is that all parties should abide by the decision of the arbitrators; that Hutchinson should continue to make glass without hindrance, the necessary capital being provided by John Scarlett; and that Hutchinson should repay the undertakers at an agreed rate over a period of twelve years. The tone of these two drafts is very different from Hutchinson's irate insistance that Clerk and Russell were entirely at fault and owed him substantial damages, in his memorial and other papers.[79]

Hutchinson calculated the cost of the stock necessary to operate the glassworks for three months to be £200 (currency unspecified, but presumably sterling), made up as follows:

Kelp 20 tunnes at 4lb per tun	£80
Ashes	20
Cullet	10
Iron work to the hole	22
Boards and other timber	12
Clay and potts	6
Massons smith and workmens waiges	20
for unseen incedinces	16
for 2 work horses	14
	200

The wages would cost a further £12 a week, which would seem to indicate a sizeable workforce, and coal £4. His plan was to work one furnace making bottles at a rate of twenty gross per week, 'the waite of bottel to be 2lb' (four ounces heavier than those mentioned earlier). There is also a paper, dated 1711, listing repairs to the premises. This includes 'building of the little glass house' £16; 'building of two ffurnisses and six arches' £50; building a stair case £1 10 0 and building and repairing the south wall and repairing the south room £2.

It is clear from David Fearn's memorial of 1730 that in addition to John Scarlett, two other men were originally intending to enter into the agreement with Andrew Hutchinson. They are named as Mr. John Ward 'the great merchant at London & Esqr. Isaacson, then one of the Commissioners of the Customs here',[80] who were to take a tack of the glassworks. William Morison wrote to John Stoddart of Comiston, elsewhere described as bailie of Prestongrange, on 7 May 1711, authorising him to take an exact inventory of all tools, ashes, coalls, goods and other materials on the premises and to assess the state of the houses, furnaces and other buildings for the 'worthy gentlemen' to examine before they signed the agreement. David Fearn was also to visit the glassworks on their behalf.[81] Sadly the inventory does not appear to have survived.

To the annoyance of David Fearn, who had the tack ready to sign, William Morison sabotaged the plan by allowing another glass furnace to be built on his land, at Dolphinstone, about half a mile inland from Morison's Haven. This hitherto unrecorded furnace was, according to Fearn, seen by Mr. Ward, who promptly withdrew from the agreement, as did Mr. Isaacson, who went to London. David Fearn recorded that Morison had breached the conditions of the bargain which was 'that Morisons haven should be the only glass work upon any ground belonging to him in Scotland.'[82] In fact, the furnace had probably been seen by Mr. Ward's brother, Ralph, during a visit to the Morison's Haven glassworks arranged by John Scarlett on 13 August 1711.[83]

The Dolphinstone glass furnace was set up by Robert Liptrap (Liptrax, Liptwaz, Liptwax), one of the 'useless' glassmakers mentioned earlier, who had previously worked at Morison's Haven and at the Leith glassworks.[84] A note dated 3 October 1711, but unsigned and with no addressee, refers to items removed from the Morison's Haven glasshouse by an order dated 12 May 1711: 'taken out of the glass-

house be Robt Liptrax all the iron werk there except what is locked up.' Since that order was given only five days after the request for an inventory mentioned above, it raises the question of whether William Morison was deliberately siphoning off some of the assets of the original glassworks, for the benefit of a rival furnace.

There is no doubting the anger of John Scarlett, who wrote to William Morison on 7 September 1711, having just heard from Mr. Ward:

> I am informed that yr Honour has incuriged Mr. Villan Liptwaz to sett up a furnace, at Dolphiston, and this very thing is the only discouregement he finds as to his proceeding ... wherefore he hopes that rather then the project with him and me should not succeed, your Honour will be soe far true to your own interests [to] incourage no other glassworks within yr territorys ... to which I must adde ... that I think yr Honoure will be very mutch to blame if you doe not either yourself punish such a vilain according to his merits or else abandon him to law and justes... [85]

Following the withdrawal of Ward and Isaacson from the Morison's Haven deal, however, John Scarlett, Andrew Hutchinson and John Ward promptly switched their attention to an alternative glassworks - that set up by David Lord Elcho in the cave at Wemyss, which they had obviously been considering for some time. The day before writing the above letter to Morison, Scarlett wrote to Hutchinson that 'having considered what was discovered last night, I have resolved to proceed and without delay, I would therefore have the lease with the earl of Weemys immediately concluded, and the men sett to work and other preparations to be made'.[86] (The glassworks at Wemyss is discussed in more detail in chapter nine.) The agreement was eventually concluded, but by early March 1712, John Scarlett was dead, and Andrew Hutchinson was anxiously attempting to ensure that his executors would honour it.[87]

The Dolphinstone furnace appears to have continued in operation for at least eighteen months, since the archive contains a list of tools, headed 'Inventory of what tools taken out of the easter wall at Morisons haven & delivered to James Tomson for the use of Andrew Hutchinson sole man'ger of the Glass house at Dolphinston the 2nd day of Decr.1712'. The list includes blowing pipes and tools used by the founder, as well as iron work for the furnace, such as nine furnace bars, thirteen arch bars, and two arch doors. There were also thirty pot boards 'in John Thomsons hands'.

The reference to Andrew Hutchinson as 'sole manager' of the Dolphinstone glass house is interesting, and raises the question of whether he had been able to continue to operate the furnace at Wemyss, or had been forced to withdraw from there and return to the service of William Morison, who in 1712 was himself subject to a caption of horning for payment of the money owing to David Burton and George Livingstone discussed earlier.[88] Hutchinson may, on the other hand, have been peripatetic, since there are minutes of a tack, dated 1711, between Andrew Hutchinson 'cloathworker' of London and the Honourable Elizabeth Graham, for a house, stable, orchard and grounds, called the Inns, situated on the shore of Fife, to the south west of Inverkeithing, with the right and privilege to dig and carry away 'all stone clay sand and the sea ware' on the premises for a period of 'three nineteen years'.[89] There is also a copy contract between Hutchinson, clothworker and tacksman of the glasswork at Morison's Haven, and the wool and linen weavers of Dunfermline in which he undertakes to improve their production of linen and woollen cloth.[90] Either he did not intend to devote himself entirely to the one enterprise, or he was seeking an alternative to the difficult job of making glass at Morison's Haven. These papers, like many others in the Fearn archive, are copies or drafts and there is no way of knowing whether the proposals were ever taken up, so they can only be taken as indicative of courses of action being considered.

There is no information about who eventually funded and managed the glassworks at Morison's Haven, although, clearly, it continued to operate. Material concerning events between 1711 and 1716 is limited to two papers in the Fearn archive, written phonetically in Scots, by men sent by William Morison to check what was happening on the estate during his absence in London. They tell a sorry tale of widespread cheating and loss. The first is headed 'Ane Treue Informatione of the Lord of prestongraing Losses in his absence 1714 and 15', which the writer estimates to have amounted to more than 20,000 merks. Much of the paper consists of complaints about the coal grieves, but there are also allegations about the glassworks. The author claims that he saw thirty-eight dozen and four bottles made in one day, but only thirty-four dozen were recorded in the accounts, at which point he was prevented from seeing any more. He accuses John Thomson, [?] Cani, and the wife of the clerk of the glassworks, of taking many cart loads of bottles illicitly to Haddington, where they were sold for twenty pence a dozen. He was also prevented from recording when the men were working and when they were not, so they might make false claims.[91]

The second paper cites a commission given by the laird of Prestongrange, on 15 February 1714, to a James Reeth, portioner of Dunblane, to oversee the whole works, to receive written accounts for the coal, salt, brick and glass works on the estate, the grain mills, the barns and the fishing, and to report weekly to William Morison in London. Then follows a graphic description of the problems he faced in trying to carry out his instructions. Firstly, when he went to the glassworks, a Thomas Bruce told him not to notice anything and tried to bribe him 'to liff be'. When that failed, the coal grieves were told he was going to take some action that would prevent them obtaining their due of coal and were encouraged to stone him. When this too failed to stop him, Bruce got some of the young colliers 'mad drunk', told them where he could be found and that they should 'fell' him'. 'And hed no Mr. Canie the od man and his wyff and Mr. Graham the wright hinderd them they hed obeyed the comand'. They beat the old man and his wife to the ground, took Reeth's cane and beat him, and threatened his landlady and her husband. Recourse to the bailie led to advice to bide his time until the laird returned home himself, which appears sensible under the circumstances!

No doubt William Morison received graphic reports of the situation but there appears to have been little he could do from London. However, he seems to have been looking there for a new partner, because negotiations were again under way 'immediately after the rebellion', this time with a Richard Soame (Somes) 'ane English projector' in London.[92] Once again David Fearn's advice was called upon,and once again he questioned Morison's judgement. Morison was, according to Fearn, planning to grant Soames a tack 'to search and digg all or any of his grounds in Scotland, or mynes, mineralls, coalls &c. with the Glass:work, not reserving the digging under any of his gates'.[93] Describing the proposed tack as 'extravagent', he advised Morison against signing it, told Soames that it would cause the 'utter ruine' of the whole estate and suggested that he should take a tack of just the glassworks, in co-partnership with Morison. His plan was that Morison should provide all the utensils and half the materials for making glass 'of severall sorts', while Soames provided the rest. It was not long, however, before Soames, who 'was but a mere projector, and had noe substance to performe' defaulted and the project was abandoned. Richard Soames did, however, become involved with the Kirkcaldy glassworks shortly afterwards.[94]

A copy of the proposed tack is extant and confirms the description of the site of the glassworks.[95] It included the whole glasswork at Morison's Haven 'with all the houses

and vault or celler under the pigeon house and all the other houses belonging to the same And allso the utensills belonging to the sd glass worke ... sicklike the sea mills att the sd haven and the parke called Morrisons Haven Parke with the lack and houses belonging thereto', the same area that was leased to the founding co-partnership. The proposed agreement was to make glass of several, unspecified, sorts, one condition being, significantly, that Morison 'shall not sett up any other glassworke within any place of the Shire of East Lowthen'.

The site of the glassworks itself was described in the tack to Daniel Tittery, while litigation between a later owner of the Prestongrange estate, Sir James Grant Suttie, and potter George Gordon in 1832, gives more details of its precise location. The case centred on the ownership of a strip of waste ground between the feu owned by Gordon and the sea, shown in a contemporary plan. (Fig.25). To support his case Gordon quoted from the original feu charter of 1649, and the progressive titles, which describes it as:

> All and Haill, that tenement of land, back and fore, under and above, with houses, biggings, brew-houses, and yeard of the same, with the pertinents lying over against the harbour of Milnhaven, now called Morrison's Haven, betwixt the said harbour on the north and west, the common highway on the south, and the Links of Prestongrange on the east parts, containing forty ells in length and twenty ells in breadth; as also the salt-girnal, with the lofts above the same, and close thereof ...[96]

Later in the petition is the statement, significant for this thesis, that the feu 'has been long occupied as a pottery, a glass-work, and salt-work &c.'

Two major changes had taken place between the date of the original feu and 1832. The highway had been moved from the south to the north side,[97] and the harbour had been altered, shifting its boundary slightly west, to the position shown in the 1832 plan. The change is described in paper relating to the Suttie v. Gordon case: 'Morison's Haven is not now the north boundary of either [feu] which is accounted for by its removal westward since the date of the old titles, as it is said, in consequence of an Act of Parliament'.[98] A plan of 1753 shows that, at that time, the harbour wall did not extend to the land, but stopped off-shore, opposite the feu in question.[99](Fig.26). Later a new harbour wall was built, closing the gap. The description 'over against the harbour' was, therefore, more accurate than it later appeared, although it is difficult to

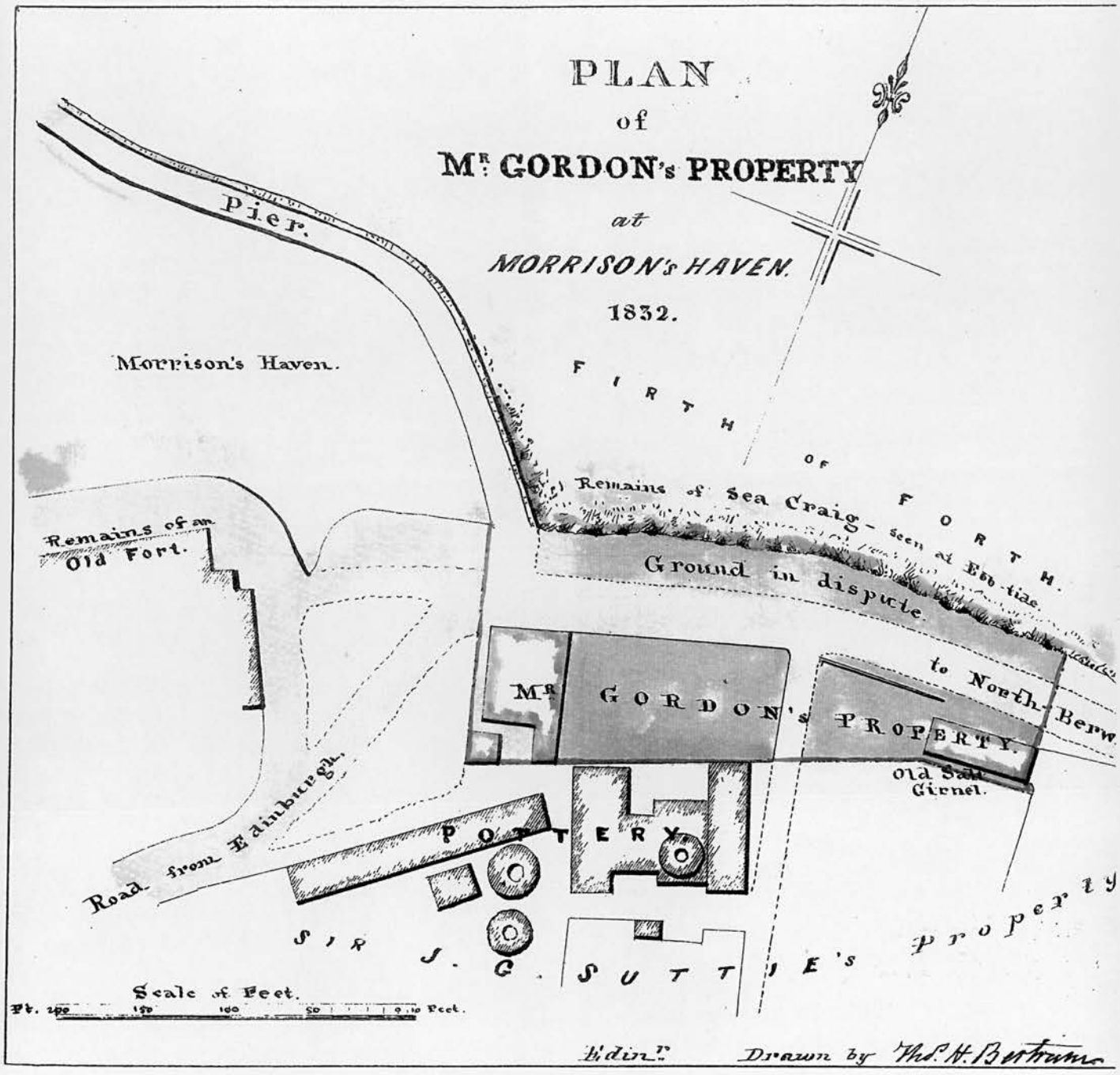


Fig.25. Plan of Morison's Haven, 1832. (NAS, GD357/49/27. Grant Suttie of Balgone papers).

understand how the harbour could have defined the western boundary of the feu. The explanation given by a representative of Sir James Grant Suttie that the feu was *near* the harbour, not bounded by it, may be the correct one.[99] Unfortunately, the 1753 plan is the earliest to have come to light showing the area in any detail. (Fig.26)

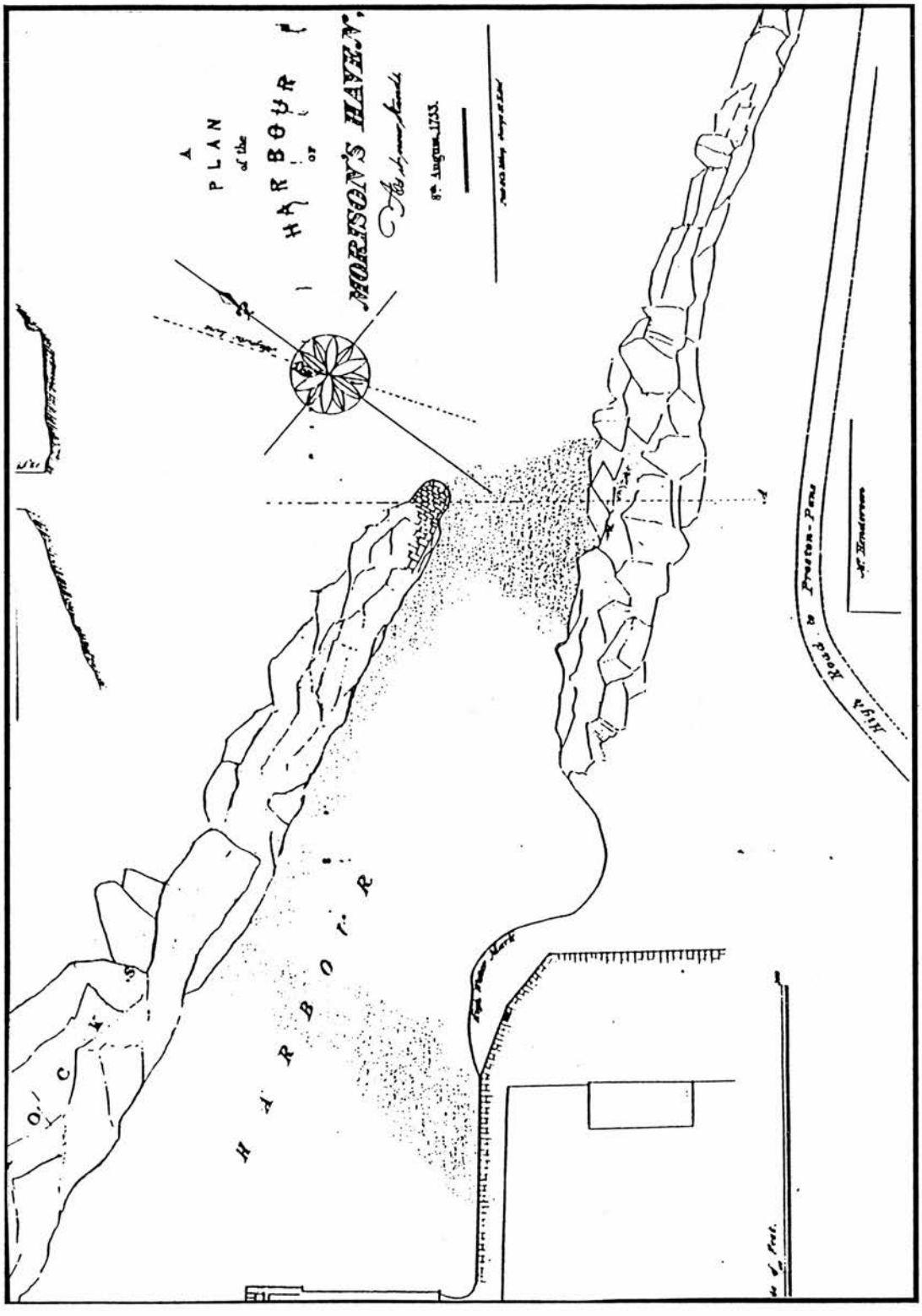


Fig.26. Plan of the Harbour of Morison's Haven, 1753. (WRH, RHP.41329/1).

Morison's Haven harbour had a long history, but it was often in poor repair, despite schemes to improve it. In 1700 William Morison craved 'an imposition for building an harbour at Morison' Haven' in the Scottish parliament.[101] His tactics are illuminating. On 10 December 1700, he presented to the parliament a petition signed 'by masters of ships, mariners, merchants, brewers, bakers, labourers of the ground and other inhabitants within the baronie of Prestonpans, Dolphinston and parish of Prestonpans', saying that the harbour had been badly damaged in a storm in 1655 and was, despite efforts to repair it, deteriorating.[102] It goes on to say that 'the Laird of Prestongrange hath been at exceeding great expense about the erecting and establishing of an Glass manufactorie' there, and could, if 'encouraged' not only provide all the local needs but export glass as well. He then attempted to find other, more altruistic, reasons to justify expenditure on the harbour. The response was swift. An undated, printed reply, together with a written counter-petition signed by far more local people, dated January 1701, are also extant.[103] Sir James Oswald of Fingleton, a local landowner, alleged that, far from most of the local population supporting Morison, the majority knew nothing about his plan and those who did thought subscriptions would be voluntary. In fact, Morison had applied for a fifteen-year imposition of a tax of 2d on every pint of ale and beer made and sold in Prestonpans, to pay for the harbour. Oswald continued that 'the said harbour is principally designed for Prestongrange's own particular profit Viz for the better carrying on his Glasswork, with a Trade for his coal and salt'. He pressed the point home by suggesting that they might just as well be asked to pay to sink his pits and repair his 'ruinous saltpans'. Oswald effectively and acerbically demolished Morison's other arguments, pointing out that there was a perfectly adequate harbour at Port Seton, a short distance away, and that such a draconian tax would be disastrous to the local brewers. The matter was dropped.

Morison fared slightly better after the Act of Union. On 16 March 1709 an 'Act for repairing and improving of Morison's Haven and the Fort there in the Shire of East Lothian...' was passed by the parliament in London, but only in a form which gave Morison far fewer powers than he had originally claimed. He had intended that the money should be raised by 'a duty upon ships comeing into his harbour and upon land carriages passing the adjacent parishes'.[104] He was, however, out-manoeuvred by opponents to the land charges, and obtained rights only to the levy of harbour dues.[105] Some repairs were carried out, however, and an advertisement in the *Scots Post-Man* on 27 January 1711 declared 'That Morisons Haven... is Cleansed, where is safe Anchoring of Ships; at present Ships of good Burden are Loading with Coals,

Salt, Bottles, and other Merchandise; And new Beacons are set up, at the West Entrie'. It ended: 'There are also Quart, pint, Chopin, and Mutchkine Bottles made there Marked'.[106] A later advertisement, of January 1725, stated that the harbour 'is now finished, and will receive ships of 200 tun'.[107] And there was a grand celebration, on 11 October 1727, attended by William Morison, commissioners 'appoynted by Act of parliament for repairing Morisons haven the fort and lighthouse' and the 'gentillmen that had contributed for the repairing the new peer'. That event included the crowning of a king 'with great huraes ringing of bells, fireing of guns, drinking to his majesteis health ... after ther was a splended entertainment with illuminations and bonfires'.[108]

At some point (no date is given), William Morison asked David Fearn to act as his chamberlain, as he could find no-one to replace James(sic) Bruce, who had left. Fearn accepted, under certain conditions, but the position was, in fact, given to William Henderson. At Morison's request, Fearn stayed at Morison's Haven, with Alexander Henderson, for five or six weeks 'to putt [William] in the way to mannage his estate reall & casuall', following William Morison's departure for London. It was several months after this that Fearn reluctantly took over as bailie from John Stoddart of Comiston.[109] The Henderson family owned feus of saltpans and other land in Prestongrange, and by William Morison's death in 1739, the tack of the glasswork site also belonged to Alexander Henderson, for which he paid an annual rent of 'One pound six shillings, six pennies of money'.[110]

It seems reasonable to assume that the appointment of William Henderson as chamberlain, and the arrival of David Fearn as bailie, gave some much needed stability and order to the Prestongrange estate. Certainly the glassworks continued to operate, and Andrew Hutchinson seems to have still been involved in 1718.[111] Useful information about estate matters, including some relating to the glassworks, is contained in a ledger headed 'Cash Accompts Betwixt William Morison of Prestongrange and William Henderson his ffactor commencing March 25 1716', the solitary survivor of a Court of Session process.[112]

Henderson's accounts, which run from 1716 to 1722, cover many aspects of the estate finances, listing rents paid in cash and kind and some personal expenses, as well as the cost of blasting a sink at the colliery and the purchase of butter and tar for smearing Morison's sheep. Entries relating to the glassworks are irregular and indicate that Henderson dealt with occasional receipts and expenditure, rather than the day-to-day running costs of the works, which would have been controlled by the glasshouse

clerk.[113] They do, however, touch on many aspects of the business, and give some insight into areas about which there is no other source of information, such as the delivery of raw material, the wages costs, and the names of some personnel. By 1723, the relationship between Henderson and his employer William Morison appears to have soured. The last entry in the credit column is on 6 March 1723 and the final note in the ledger is dated 25 February 1725. It reads: 'This is the accompt of charge & discharge ... given in by me William Henderson late ffactor to the Laird of Prestongrange in obedience to the Lord Justice Clerk in the accompt & reckoning betwixt Prestongrange and me.'

Whether due to the condition of the harbour, or because it could not handle larger ships, it is clear from Henderson's accounts that some of the raw materials for the use of the glassworks were shipped into Leith and then transported to Morison's Haven. In 1716, for example, ashes from London costing £114 were shipped to Leith by skipper Jolly (member of a well-known Prestonpans family of seamen), and transferred to a barque 'to bring them to the work'.[114] There are several shipments of ashes paid for by William Henderson, as well as cart loads of clay and one shipment of clay from Newcastle. Cullet seems to have been bought from John Morison, merchant in Edinburgh, and relative of William, but it was also received in part payment for bottles. An entry for 31 October 1716 reads 'from Mr. Alan for one Doz. qrt bottles (the rest being paid in collet)' £3 8 0. Kelp, on the other hand, appears in both the 'charge' (credit) and 'discharge' (debit) columns. In July 1721 is an entry 'to 4 workmen who burnt 3 tun kelp for the use of the glasswork' £48 12 0, while there are four entries in 1717 of payments received for two carts of kelp sent to Cockenzie at 12s a cart.[115]

In the entries covering 1716, William Henderson recorded payments to Richard Wightman to pay the glasshouse workforce, which implies that he was acting as clerk at the time. The post of clerk was later filled by John Sym, who was paid £1 10 0 a week. Sym appears to have performed roles other than that of clerk, since there are payments to him for 'puting on the potts on the killn' in 1719 and 'waiting upon the potts in the glasswork & keeping in the fire under them' in 1720. The weekly wage bill for the glassworks in 1717 was £71 8 0, but no breakdown is given. This sum equates very closely to the £6 sterling required by Andrew Hutchinson for his team of glassmakers and anciliary workers in 1710-11.

A payment to John Thomson 'blower' on 16 May 1722 confirms that he was still working at Morison's Haven, some thirteen years after he was first mentioned, and a reference to James Love further indicates some stability in the workforce. There had also, however, been some additions to the glass-makers. An advertisement in the *Edinburgh Evening Courant* in January 1719, promoted glass bottles 'of all sorts' being sold in Leith, 'made by *English* (sic) Workmen (lately come from London) at Morison's Haven...'[116] The new recruits may have been part of the expansion at the glassworks discussed below; certainly there had been a sufficiently large influx of English workmen by 1721 to justify it being dubbed 'little England', by a regular visitor.[117]

William Henderson recorded payments for bottles produced at the glassworks, but the number of transactions varies greatly from year to year. In 1718 he was paid for 8,420 chap (?chopin) bottles, 212 pints, 146 mutchkins and a dozen wide-mouthed bottles of unspecified size. An account for 33 dozen vials was also settled. The number of recorded bottle sales reduced each successive year, only three gross being sold in 1721 and none at all in 1722. This does not necessarily imply a falling off in trade, or closure of the works, but probably simply reflects that all the usual transactions were under the control of the glasshouse clerk, or perhaps that the change of management, discussed below, had resulted in a different system of marketing.

Henderson's account book also contains some small indications of a major change in the running of the glassworks, which took place in about 1720, when William Morison finally succeeded in his attempts to lease the glassworks and possibly more of his estate, thanks to one of the more bizarre episodes of Scottish economic history - the arrival on the scene of the York Buildings Company. This will be discussed more fully in chapter ten, but the involvement of men with access to large amounts of capital transformed the glassworks for the final few years of its existence. The works were leased to Robert Hackett of London, the man who acted for the York Buildings Company in the purchase of the Winton, Panmure, and other forfeited estates in 1719.[118] In 1721, the account book records a payment of £138 18 0 from Messrs Fordyce and Campbell for 102 carts of great coal and 19 carts of panwood 'furnished to the glass works'. Thomas Fordyce, writer in Edinburgh, and Archibald Campbell, writer to the signet, were agents of the York Buildings Company, owners of the adjacent Winton estate and were subsequently involved with the Port Seton glassworks, as will be discussed in chapter 10. There is no doubt that members of the

York Buildings Company were involved with the Morison's Haven glassworks, but how much of the business was on their own account is difficult to estimate. There is also a hint that company personnel may have been concerned with other aspects of management of the Prestongrange estate. In November 1720, Henderson recorded payment of £6 'To PG younger who came out in coach with Mrs. [messrs.] More [Archibald More, Morison's lawyer], Hackett, Campbell & Ffordice to quell the mob pr. colliers & to pay the coach hyre', while an entry for 10 July 1721 records the expenditure of £3 12 0 on ale for the salters, when Messrs. Fordyce, Campbell, Dickson, Peck, Elder[119] and William Henderson, inspected the salt pans. Also in 1721, William Morison gave instructions that the sum of £1,200 should be paid to Fordyce and Campbell, but the reason is not specified.

The Port Seton glassworks will be discussed in chapter 10, but it seems possible that there may have been a glass furnace on the Winton estate earlier than previously thought, and that its operation and that of the Morison's Haven glassworks were closely linked at this period. In a summary of material relating to Robert Hackett, which is unsigned and undated, but which lists extracts from documents written between September 1720 and June 1721, a letter of 13 June 1721 is recorded as containing the line 'Morrisson & Winton are to be joyned together for glass works, bottles, etc.'[120] York Buildings Company documents in the Public Record Office appear to relate only to the Morison's Haven works but, in view of this letter, Hackett and his partners, or their employees, may have actually been operating the two works in the early 1720s.

There is ample evidence that Hackett, Campbell and Fordyce were regarded with grave suspicion by other members of the York Buildings Company. A series of letters from John Cockburn of Ormiston MP, one of the directors, written in 1721 from England to an unknown recipient in Scotland, made it clear that he considered Hackett a cheat and that the company's agents, Fordyce and Campbell, 'were Mr. Hackett's servants more than they thought themselves ours'.[121] He went on 'they certainly connived at his cheating of the company in hopes of haveing a share in the plunder ... Had they been faithfull to the company Mr. Hacketts tricks might have been known to every body a long time ago.' One of the accusations levelled at Hackett was that he issued bills drawn on the glassworks.

It is reasonable to assume that coal for the glassworks was normally obtained from the Prestongrange pit, however it was sometimes bought from the Halkett mines via

Limekilns, on the other side of the Forth. A letter in the Halkett of Pitfirrane papers, addressed to Patrick Angus, the factor at Limekilns, dated 29 December 1721, enclosed a receipt for 59 chalders of coal 'upon Mr. Fordyces acct', again indicating the active involvement of Thomas Fordyce. Interestingly, the writer from Morison's Haven was John Colnott, who went on to say: 'I shall see you paid att meeting wch I hope won't be long for I expect you'll doe me the honour to come and see our works, and I begg you wont faill in loading two or 3 more boats as soon as possible.'[122] John Colnott appears to have achieved a position of some authority at the glassworks, and the tone of his letter implies a certain pride in the developments there. Colnott was also involved with a glassworks which operated at Kirkcaldy from c.1717 to c.1726, which will be discussed in chapter nine.

As usual, information about the new regime at the Morison's Haven glassworks is fragmentary, but it appears that the intention was to produce window and plate glass. Certainly there was a large injection of new capital. Hackett, and his un-named partners, spent considerable sums on the works, amounting by October 1723 to at least £6,040 sterling, £3,040 of which came from the York Buildings Company, the remainder from Hacket himself.[123] There is also a remarkable statement in *The Daily Journal* of September 1723, that 'We are assured that the York Building Company have appropriated the sum of 10000 l. for carrying on and rendering effectual a glass work for crown and plate glass in Scotland.'[124] The York Buildings Company was, of course, adept at appropriating funds but the newspaper statement implies an even greater commitment than seems to have been the case. It does, however, confirm the intention to produce plate glass. The only evidence that it was actually made is a single entry in Henderson's account book, which records the receipt of £6 for '7 pice black plate glass' on 19 June 1722.[125]

By 1723 the glassworks were apparently in difficulties and in October 1723, Hackett suggested that the York Buildings Company should accept £1,000 in cash to settle his debt of £3,040, with the glassworks as security, the materials on site being valued at £1,980 sterling.[126] The proposal was accepted but on 16 May 1724, a company court (which was convened on a Saturday instead of the usual Wednesday) decided that Hackett and his un-named partners could continue to operate the glassworks at their own expense, although the company should retain ownership of the works and the materials there. They were to receive half the profits of the glassworks, until the £1,000 had been repaid.[127] This arrangement was bitterly criticised in a complaint submitted to the Treasury on 3 February 1727, which alleged that Sir John Meres,

then governor of the York Buildings Company, had manipulated the directors 'in order to have the Glass Works for himself for little or nothing'.[128] Dismay was expressed that 'the Company cannot retain the materials, nor demand of Mr. Hackett any more than One half of the Profit arising by the said Glass Works; and if they are not set to Work as is very likely they will not, the Company can have nothing for their £3040'.[129] Sir John Meres also refused to hand over the deeds of the glassworks, which he claimed had been destroyed 'by vermin'.[130]

Whatever the problems, it does appear that, during the early 1720s, the glassworks had been much improved and had been producing high quality glass. An anonymous pamphlet *A Letter from a Gentleman at Edinburgh, to his friend at London*, which is undated but which the cataloguer states was probably printed in 1727, described the Morison's Haven glass-house as 'the best perhaps in Britain'.[131] Although this hyperbole almost certainly owes more to polemic than accuracy, it must surely indicate some status, at least locally. The writer goes on to state that, at the glassworks 'there lies a very great quantity of Barrila with English sand fit for making plat glass...'. Cummings comments that, although there was a demand for plate glass, the difficulties and costs of casting it should have warned the company to avoid such an enterprise.[132] It would, indeed, be surprising if the intention had been to cast glass, since even the highly successful Vauxhall glasshouse abandoned casting during the eighteenth century, until its revival in the 1770s. Unless evidence is found that the plate glass was to be made by the casting process, it must be assumed that Hackett's intention was to produce it by the broad-glass method, as it was in the early days of the glasshouse. Nevertheless, the supplies of barilla and English sand indicate that a high quality product was intended, on a considerable scale, and was presumably produced, at least for a time. Certainly the valuation of the materials on site in 1723 at £1,980 sterling implies a sizeable concern. The glassworks does appear to have restarted operations, since the Pitfirrane accounts show payments for coal by John Colnott at the Morison's Haven glassworks in 1725 and 1726.[133]

However impressive the glassworks, they appear to have finally stopped operating by the date of the pamphlet, probably 1727, when the York Buildings Company personnel turned to the idea of building a new glasshouse at Port Seton, on land owned by the company and leased to local entrepreneurs. Why production should have stopped at this point, particularly after such expensive investment, is open to speculation. The reason may be related to William Morison's worsening financial situation; Hackett's lease may have expired; or the operators may have decided that

there was a possibility of greater profit if the workforce (and materials?) were switched to a new glassworks on their own property. It is also possible, in view of Hackett's apparent dishonesty, and his control of the company agents, that the Morison's Haven works, which were the security for his debt to the York Buildings Company, had been gradually run down in favour of the Winton enterprise. As was pointed out in the report to the Treasury in 1727, 'if the [Morison's Haven] Glass Works should be set to work, and there should be no profit, the Company can demand nothing.'[134]

An advertisement in the *Caledonian Mercury*, on 13 July 1727, for the voluntary roup of the lease of the Morison's Haven coal and salt pans, may indicate a last-ditch bid to improve matters. It proposed that the main coal seam should again be worked, only the small seams having been mined for several years, adding 'There is also a Glass Manufactory at Morison's Haven near the said Coal, which will add to the consumption of the same.' Only three of the eleven salt pans were in good condition.

Meanwhile William Morison appears to have slid inexorably towards bankruptcy, culminating in sequestration by 1730. In his autobiography, the minister of Inveresk, Alexander Carlyle, attributed Morison's downfall to gambling:

> Morison had been very rich, but had suffered himself to be stripped by the famous gambler of those times, Colonel Charteris, whom I once saw with him in church .... This simple gentleman's estate soon went under sequestration for the payment of his debts. [135]

Whatever the truth of Carlyle's allegation, Morison certainly had massive financial problems and his largest debts were, indeed, to Colonel Charteris.[136] 'A 'Memoriall anent the Ranking & Sale of Prestongrange' of 1736, in the Saltoun papers[137] lists debts of £382,011 12 0 Scots, of which some £245,825 was in heritable bonds payable to Colonel Charteris. He had died in 1732, and the debts were being pursued by his heirs. Morison's highest ranking creditor was the Viscount of Arbuthnot, his son-in-law, who was still owed £9,500 Scots of his wife's dowry. The memorial adds that 'there is no proof yet of the value of the lands', but an earlier paper had valued the Prestongrange estate at about £26,000 sterling (£312,000 Scots).[138]

By 1730 Morison was in prison and was faced with the added humiliation of being pursued in the courts by his own son. William Morison younger was feuar of

Craigleith as heir to his mother. His father had a life rent, but had allowed the house to fall into a state of disrepair, and his son petitioned the court of session to order William Morison senior to set it to rights. In his reply Morison stated that 'the whole estate belonging to Prestongrange and the Barony of Craigleith amongst others is now under sequestration at the instance of the creditors'. To which he added, 'Nor can Prestongrange help observing that amongst his other misfortunes it is none of the smallest that his son should be the most rigourous and pressing of all his creditors. He possesses ane annuity of 3000 merks while his father is lying in prison and cannot command a sixpence out of the estate...'. [139]

The prison, in which Morison was incarcerated, was the Fleet, in London.[140] A letter to Lord Milton from George Buchan, one of the York Buildings Company members involved with the glassworks at Port Seton, written in March 1736, says that among William Morison's 'late great and foolish contractions' he had become debtor to a Mr. Sidney for about £3,000 sterling, for which, in 1729, he had been pursued in the courts and forced to leave Scotland.[141] He 'ever since has been confined to the fleet prison.'[142] Buchan's letter confirms that Morison's affairs were in a chaotic state. As a justice of the peace, Buchan had received a warrant from the manager of the sale of the Prestongrange estate, ordering that Morison's charter chest should be broken open and the 'rights of the lands and vouchers of the payments to the present creditors' should be looked for and inventoried. In fact Buchan met John Rainie, manager of the Prestongrange coal and salt works, who had a key to the chest. They found 'the necessary later papers of the lands but no vouchers of payments' and Buchan describes Morison's papers as 'being squandered among many hands [so] they cannot be brought together'. It seems that, despite these efforts to sort out his affairs, matters were not resolved until 1745, some six years after Morison's death, when the Prestongrange estate was advertised for sale by public roup on 2 July 1745.[143] It was sold to William Grant, having been managed in the interim by Alexander Tytler, factor appointed by the Lords of Session,[144] and, following his death, by his son William Tytler, writer to the signet.[145] William Morison had finally managed to obtain his release from the Fleet, and died 'abroad' in 1739.[146]

Although the entire Morison's Haven site, including the harbour, is now buried under tons of mining waste, one small tangible memorial to glassmaking in the early eighteenth century survives nearby. In Tranent churchyard, the headstone commemorating glazier Thomas Waugh, who died in 1705, is embellished with relief carvings depicting, typically, the tools of his trade. On either side of a hand emerging

from the clouds and holding a lozenge of glass, are not only a square and a light hammer but, more significantly, tools belonging not to the trade of glazier, but that of glassmaker - a blowing iron with a gather of glass and pucellas, the tool used to shape the mouths of open vessels. Clearly the stone mason was familiar with the local glassworks, which had by then been operating for some seven years, and which must have aroused considerable interest in the area. (Fig.27)

The coal seams at Prestongrange were worked until 1963 and continued to fuel industrial production in Prestonpans, one of 'the first industrial villages in Scotland'[146] The area, also described as 'one of the crucibles of the industrial revolution'[147] became well known for its chemical works and potteries in the eighteenth and nineteenth centuries, one of which was, as described above, built on the site of the glassworks. It seems reasonable to suggest that the glassworks at Morison's Haven, which operated for at least fifty years, from the 1620s to *c.*1646 and again from 1698 to *c.*1727, initially making drinking glasses, and later bottles, vials, tumblers and plate glass, also played an important and hitherto largely unacknowledged role in the area's early industrial history. The lack of awareness of the glass industry is confirmed by the fact that, although a recent broadcast *Just a Dot on the Map* discussed Prestonpans' industrial history in some detail, outlining the existence of salt pans, chemical works, potteries, brickworks and the brewery, no mention was made of the glassworks.

Fig.27. Headstone of Thomas Waugh, glazier, in Tranent churchyard.

[1] *APS*, x, 180.

[2] NAS, GD109/3954 Bargany muniments. 'Act and Ratification in Favours of the Glass-Manufactory at Morisons Haven', 5 August, 1698. There is no clue in the index to these papers to indicate why this document is there.

[3] See G. Marshall, *Presbyteries and Profits Calvinism and the Development of Capitalism in Scotland, 1560-1707* (London, 1980).

[4] EUL, La. 491/12. Bullion Books. 'Manufactorie Book', starting Nov. 1696.

[5]Catherine Scott, 'The Development of the Glass Industry on the Rivers Tyne and Wear' (University of Newcastle Ph.D. thesis, 1982), 188.

[6] A. Fleming, *Scottish and Jacobite Glass* (Glasgow, 1938), 104.

[7] R.K. Marshall, *The Days of Duchess Anne* (London, 1973), 46.

[8] NAS, PA7/21/171. Parliamentary papers. Petition of William Scott, cabinet-maker in Edinburgh.

[9] Marshall, *Prestbyteries and Profits*, appendix, entry 65.(no page no.).

[10]*APS*, ix, 490.

[11] NAS, E73/119/1.

[12] NAS, GD124/1130/33/7. Earl of Mar muniments.

[13] *Edin. Burgs. 1701-1760*, 118.

[14] NAS, PA7/19/110. Petition of James le Blanc, merchant in Edinburgh, August 1705.

[15] The documents are undated, but the index says 1705.

[16] NAS, GD124/10/444/13.

[17] NAS, GD18/1767/3/4. Clerk of Penicuik Mss. Account, 18 May 1726, currency not specified.

[18] NAS, GD112/15/118/25. Breadalane papers. Letter from Edinburgh, 2 April 1707.

[19] Payments to 'le blanc' were listed in 1698. Two, for unspecified services totalling £56 4 0, another for collecting goods from Kirkcaldy. (NAS, RD14/41/1437).

[20] NAS, GD247/114.

[21] NAS, CH2/307/28. Prestonpans parish records.

[22]*RPCS*, 3rd Ser., v, 621-3.

[23] *ibid*, v, 129.

[24] *Edin. Tests. 1701-1800*, 231.

[25]M.D. Young (ed.), *The Parliaments of Scotland*, ii (Edinburgh, 1993), 510.

[26] *Scots Peerage*, viii, 356.

[27] *Scots Peerage*, iv, 206.

[28] *Scots Peerage*, i, 312.

[29] NAS, GD1/576/8. Joseph Blake in London, to Mr. Andrew Hutchinson, 1 May

1718.

[30] NAS, RH9/17/174/5. Earl of Sutherland in London to William Morison of Prestongrange, 18 March 1735.

[31] Young, (ed.), *Parliaments of Scotland*, 510.

[32] *ibid*, 510.

[33] Draft ms. *History of Parliament 1688-1714*. History of Parliament Trust, Wedgwood House, London. My thanks to Andrew Hallam for enabling access to this material.

[34] NAS, RH9/17/174.

[35] *ibid.*

[36] House of Lords, Printed Appeal Cases and Writs of Error, 1716-20, no.74.

[37] WRH, CS21/447. None of the papers in the box or bundle is individually numbered.

[38] *ibid.*

[39] In 1679, a 31 year lease of the old glasshouses in Newcastle was granted to 'Jacob Henrey, William Tizacke and Daniell Titery', and was renewed at a reduced rent in 1710. (Tyne and Wear Archives, Calendar of Common Council Book, Newcastle 1656-1722).

[40] CS18/188. Pages are not numbered.

[41] BOS, BS/1/5/3. Minutes, 1696-1726.

[42] WRH, CS18/188.

[43] WRH, CS21/447.

[44] NAS, RD4/89/933 and RD14/41/1437. 'Accompt of dispursements be George Livington Theasurer to the Glass Company'.

[45] NAS, CC8/17/22.

[46] House of Lords Record Office, Appeal Cases and Writs of Error, William Morison of Prestongrange v. James Smith, David Burton and others.

[47] *APS* x, Appendix, 49.

[48] WRH, CS18/188.

[49] Italian physician Bernardino Ramazzini's treatise on occupational diseases, published in 1713, included those of glass and mirror makers. He wrote that glassmakers retired from their work at the age of 40, since 'no one could endure for long the strain of such work as these men have to do, nor could it be kept up except by robust men in the prime of life'. *De Morbis Artificum* trans. Wilmer Cave Wright, *Diseases of Workers* (New York and London, 1964), 63.

[50] WRH AC9/219. My thanks to Sue Mowat for this and other Admiralty Court references.

[51] *Calendar of Treasury Books*, xxii (1950), 128.

[52] NLS, *The Scots Post-Man or The New Edinburgh Gazette*, 8-10 March 1709; H. Arnot, *The History of Edinburgh* (Edinburgh, 1779), 349.

[53] NAS, GD1/576/8. 'Memoriall ffor Mr. David ffearn Advocat Against The Laird of Prestongrange', 1730.

[54] NAS, GD/1/576/15. None of the papers in GD1/576 are individually numbered.

[55] NAS, GD1/576/15.

[56] NAS, GD1/576/16.

[57] An Andrew Hutchinson was 'Admitted to the Freedom [of the Clothworkers' Company] by Servitude' in London, on 20 December 1681, aged at least twenty-one, on payment of the usual fee of 5/-, after being apprenticed to Charles Pough. (D.E. Wickham, archivist, The Clothworkers' Company, pers. comm. 3.11.97).

[58] NAS, GD1/576/15.

[59] NAS, GD1/576/15.

[60] NAS, GD1/576/15.

[61] NAS, GD1/576/15.The currency is generally, not specified but there is the occasional reference to sterling, and that seems likely to apply to all figures.

[62] NAS, GD1/576/15.

[63] NAS, GD1/576/15. Litharge was lead monoxide, used to replace some of the alkali in the batch, to improve the quality of the metal (Newman, *Dictionary of Glass*, 186). Saltpetre (potassium nitrate) was used as a flux, (Vose, *Glass*, 113).

[64] NAS, GD1/576/15.

[65] NAS, RD3/145/358. The deed was registered on 10 June 1715. This confirms a copy contract, dated 1711, in the Fearn papers, which names Menzies, Clerk, and Russell as the co-partners but his name is not subsequently mentioned in the papers.

[66] NAS, GD1/576/15. 'Petition Andrew Hutchinson'.

[67] NAS, GD1/576/15. 'Memoriall for Mr. Andrew Hutchinsone maister of the glass manufactory att Morisons Haven anent the dammadges sustained by him related to the glassworks of Glassgow and Morisons Haven'.

[68] D. Crossley, 'Sir William Clavell's Glasshouse at Kimmeridge, Dorset: The Excavations of 1980-81, *Archaeological Journal,* cxliv (1987), 345.

[69] A.M. Terlinden and D.W. Crossley, 'Post-medieval glass-making in Brabant: the excavation of a seventeenth-century furnace at Savenel, Nethen', *PMA,* xv (1981), 181.

[70] NAS, PA7/18/55. His name is spelt 'Culnott' elsewhere in the paper.

[71] At a later period Leith glassworks were renowned for their production of very large bottles.

[72] NRO, 2DE11/3/27. George Allen, glassworks manager, to John Delavel, 27 Jan. 1784: 'There are some of the glassmen and teazers out of their time, I should be glad to know whether it be your lordship's desire to have them articled as they are good workmen. In my opinion it would be better to have all these men bound that cannot be awanting, in case of an incouragement from other factoreys.'

[73] NAS, GD1/576/15.

[74] NAS, GD1/576/15. Memorial.

[75] NAS, GD1/576/15. See chapter 6 for more details of the Dagnias.

[76] F. Buckley 'Glass Houses on the Tyne in the 18th Century', *JSGT,* x (1926), 26-52.

[77] NAS, GD1/576/15. 'Proposals by Andrew Hutchinson glass worker and master of the glass work at Morisons haven to the gentlemen undertakers of the said work'.

[78] In 1710 'a terrible fire' was reported in Leith 'which has consumed that large tenement where the sail duck manufacture was' (*Scots Post-Man* 26 October 1710).

[79] NAS, GD1/576/15.

[80] NAS, GD1/576/8.

[81] NAS, GD1/576/15.

[82] NAS, GD1/576/8.

[83] NAS, GD1/576/15.

[84] M. Clough, 'The Leith Glass Works: 1689-*c.*1708', *Scottish Industrial History*, v (1982), 5. Robert Liptrap and his wife Margaret Cochran had a son, Robert, born on 12 July 1703, (North Leith OPR).

[85] NAS, GD1/576/15.

[86] NAS, GD1/576/15.

[87] NAS, GD1/576/15, signed and witnessed notice from Andrew Hutchinson to David Fearn for Rymer Intervall, trustie and manager of the sail cloth manufactory at Leith, 7 March 1712.

[88] NAS, RH9/17/174. Petition of William Morison of Prestongrange, 20 November 1712.

[89] *i.e.* 57 years. (Bell's *Commentaries on the Laws of Scotland*).

[90] NAS, GD1/576/16.

[91] NAS, GD1/576/15.

[92] NAS, GD1/576/8. Fearn Memorial.

[93] NAS, GD1/576/8.

[94] See chapter 9.

[95] NAS, GD1/576/15. 'Coppy Tack and Copartnership between Prestongrange and Ricd Soame Feb: 1716'.

[96] NAS, GD351/49/26. Printed Petition, 10.

[97] Morrison, *Decisions of the Court of Sessions Nov. 1825-1841*, xv (Edinburgh 1837), 1037.

[98] NAS, GD357/49/25. 16 December 1834.

[99] WRH, RHP.41329/1. 'A Plan of the harbour of Morison's Haven, as it now stands, 8th August, 1753'.

[100] NAS, GD357/49/20.

[101] *APS*, x, 231.

[102] NAS, PA7/17/1/58.

[103] *ibid.*

[104] NLS, Ms.14415 f.170. Yester papers.

[105] Andrew Hanham, History of Parliament Trust (pers. comm.). Morison's parliamentary career appears to have been largely devoted to matters of self-interest. 'He seem to have been almost entirely engrossed in trying to ensure the passage of his various business-related bills, and showed very little interest in anything else... It seems, too, that the only reason he went out of his way to obtain re-election in 1713 was to continue to enjoy the privileged status MPs had in proceedings for debt.' (Andrew Hanham, History of Parliament Trust, pers. comm., 29 May 1997).

[106] ie. 'sealed'.

[107] *Edinburgh Evening Courant*, 25 Jan 1725.

[108] NAS, GD1/5/570/8.

[109] NAS, GD1/576/8. Memorial.

[110] WRH, CS229/P/1/30. Executory mss for the estate of William Morison of Prestongrange.

[111] NAS, GD1/576/8. Joseph Blake in London, to Mr. Andrew Hutchinson, 1 May 1718.

[112] WRH, CS96/4520.

[113] C.A. Whatley, 'Salt, Coal and the Union of 1707', *SHR*, lxvi (1987), 35, uses Henderson's account book in calculating the value of various products of the estate. This appears to assume that the entries for glass sales represent the total volume of production, but this seems very unlikely. The wide variation in the number of entries is more likely to indicate Henderson's occasional involvement with the glasshouse administration, possibly in the temporary absence of the clerk.

[114] WRH, CS96/4520. 3 August 1716.

[115] These latter entries are puzzling, since the earliest reference to Port Seton glassworks is *possibly* 1720, although the partnership agreement is not until 1728-9. It is not impossible, however, that the glassworks there was established even earlier, or that the kelp was intended for the Kirkcaldy glassworks, which was operating at

that time.

[116] NLS, *Edinburgh Evening Courant*, 15-19 January 1719.

[117] NAS, GD1/170/1. York Buildings Company papers, reported letter from Robert Hackett, January 1721.

[118] A.J.G. Cummings, 'The York Buildings Company: A Study in Eighteenth Century Corporation Mismanagement', (Strathclyde University Ph.D. thesis, 1981), 325. Cummings suggests the date of 1720 but Hackett may have become involved by 1719.

[119] Probably Daniel Peck, described by Cummings as a known speculator who, with his son Philip, was operating in Scotland at the time.

[120] NAS, GD/1/170/1.

[121] NAS, GD1/170/1. 23 Sept. 1721.

[122] NLS, Ms.6437 f.43. Halkett of Pitfirrane papers.

[123] PRO, T/1/258/99. Treasury Board papers. Narrative and Account of several Proceedings relating to the Affairs of York Buildings Company Extracted from the Minute Books of the General Courts.

[124] NLS, Mf. 83/48. *The Daily Journal,* London, 7 Sept 1723.

[125] WRH, CS96/4520.

[126] Cummings, *YBC*, 326.

[127] PRO, T/1/258/99.

[128] PRO, T/1/258/99.

[129] PRO, T/1/258/100.

[130] PRO, C/11/378/149.

[131]NLS, Mf.134, reel 260, no.8.

[132] Cummings, *YBC*, 326.

[133] NLS, Ms. 6440 f.62; Ms.6441 f.60.

[134] PRO, T/1/258/100.

[135] Dr. A.Carlyle, *Autobiography of Dr. Alexander Carlyle of Inveresk 1722-1805* (Edinburgh, 1910), 7.

[136] William Henderson lists a number of large sums paid for rent to 'C.C.', or 'C. Charters'. The first, £3,000 was for 'half a year due at Lam: 1718'. Others, paid on 24 Sept. 1719, 17 Sept. 1720, 25 Feb. 1721, were each for £4,291 10 0.

[137] NLS, Ms.17713, ff.48-9. Saltoun papers.

[138] NLS, Ms.17712, f.68. Saltoun papers. 'Note of the debts due to the creditors of Prestongrange', n.d. but post 1732. William Morison had, in fact, expressed gratitude towards Colonel Charteris 'a very firm kind friend', in a letter to Lord Milton (a relative of Charteris) in 1725, stating that Charteris 'has acted honourably with me ...

and he does demand nothing of me but common interest.' He went on to say that, at that time, he owed Charteris £15,125 sterling. (NLS, Ms.16532 F.87. William Morison of Prestongrange in London to Lord Milton at Edinburgh, 14 August 1725).

[139] WRH, CS236/M/2/10.

[140] PRO, PRIS 1/4, Fleet Prison Committment Book 1728-July 4 1729, has been examined, but has yielded no information. The volumes covering 1729-1733 are missing.

[141] In fact William Morison and a Thomas Burdus had jointly borrowed £5,400 on 27 April 1725, in London. (WRH, CS133/422) Morison failed to repay the loan and agreed on 10 May 1728, to pay £2,835 in two instalments. He again failed and at a court of session hearing on 21 June 1733, all his land and property was claimed by Henry Sidney. Although a list of his assets, made on 12 November 1729, included the harbour at Morison's Haven, the two corn mills nearby, his salt pans and coal heughs, it does not mention the glasshouses, confirming that they were, by then, defunct. (WRH, CS138/5363. Decreet of Adjudication, Henry Sidney v. William Morison, 21 June 1733).

[142] NLS, MS.16564, f.63. George Buchan at Longniddrie to Lord Milton, 22 March 1736.

[143] *Edinburgh Evening Courant,* 17 June 1745.

[144] NLS, Ms.3720. Journal of the management of the coal and salt works of Prestongrange, 1748.

[145] WRH, CS210/71.

[146] NAS, CC8/8/104. Testament of William Morison of Prestongrange.

[147] C.A. Whatley, BBC Scotland, *Just a Dot on the Map,* broadcast 12 November 1996. My thanks to Christopher Lowell for a cassette of the programme.

[148] G. Dalgleish, *Just a Dot on the Map.* It is interesting to note that the oldest known minutes of a Masonic lodge in Scotland are those from Morison's Haven. (R.E. Wallace, 'The Minute Book of the Lodge of Aitchison's Haven, 1598-1764', *Grand Lodge of Scotland Year Book,* (Edinburgh, 1981). My thanks to librarian, Mr. Cooper, for this information.

CHAPTER 9

WEMYSS AND KIRKCALDY

Despite the fact that the glasshouse at Wemyss is mentioned in much of the literature on British glass, often as the *only* early Scottish glassworks, for example, Thorpe in his *English Glass* lists the glassworks at Wemyss as the one taken over by Sir Robert Mansell,[1] an assumption repeated by Lythe,[2] very little is actually known about it. The glass cave, which has already been described in chapter four, seems likely to have been the site of the glassworks built at Wemyss by 1621, but no other information has been found. Fortunately, however, some tangible evidence of the later period of its history has come to light which, although slight, does prove that the cave was indeed home to glassmaking in the early eighteenth century.

On 1 September 1698, at the same time as the granting of William Morison's patent, the Scottish parliament passed an 'Act and Ratification in favors of the Glass Manufactory at the Weems'[3] under the same terms. The act was designed for 'the better Improvement of ane Manufactory of Glass Work set up be David Lord Elcho within his bounds at the Weems and to be carried on by him and his partners whom he had assumed.' The names of those partners are given in a protest recorded in the register of deeds some three months earlier, on 28 May 1698. On that day, £440 Scots was demanded from David Burton, glazier in Edinburgh, in payment for all the shares in the 'Glassecove Work of Wemyss'.[4] The shares, valued at £44 Scots each, were allocated as follows:

David Burton	4
George Watson	2
?Lychester Douglas	2
William Gordon	1
Gaven Hamilton	1

David Burton denied that he was acting as cashier for the company and insisted 'that none of the forsaid persons had payed in their said shares to him', but he did agree to pay for his one outstanding share[?] 'being onlie fourty foure pounds'. This fragment of information is of some interest, not least because it shows the major shareholder in the Wemyss company to have been David Burton, glazier, who was also a shareholder in the Morison's Haven glassworks, which was being set up at the same time. David

Lord Elcho is not named as a shareholder. The amount of capital seems very low, compared with that invested in the Morison's Haven works, but it may be that the company had been set up simply to provide some initial working capital, and that the cost of bulding and equipping the furnace was born entirely by Lord Elcho.

David Lord Elcho (1678-1720) was the son of Margaret, Countess of Wemyss and James, Lord Baron of Burntisland. He inherited the title of third Earl of Wemyss on the death of his mother in 1705. She had already resigned the estate in his favour when he married, in 1697, Anna Douglas, daughter of the first Duke of Queensberry, who brought with her a tocher of 100,000 merks.[5] Shortly after taking over the estate Lord Elcho set out to develop the coal production and, according to Fraser, appears to have spent between £15,000 and £20,000 sterling on improving and extending the coal workings during his lifetime.[6] It seems reasonable to assume that, in common with other coal-owners, his application for the patent to manufacture glass was linked to the need to increase local consumption of his coal.

Fraser says that Lord Elcho constructed furnaces and other buildings for the glassworks, 'but was then constrained to abandon the enterprise'[7] but no clue is given as to why so much capital should have been expended unproductively, and no further information has come to light. It can, however, be confirmed that he did, indeed, build a glass furnace in the cave at Wemyss, a fact which did not escape the notice of those interested in the glassworks at Morison's Haven, Andrew Hutchinson and John Scarlett, in 1711.

As has been shown in chapter eight, when William Morison allowed the erection of a second glassworks on his land and caused London merchant John Ward to withdraw from an agreement to invest in the Morison's Haven glassworks, the interested parties switched their attention to Wemyss. Among David Fearn's papers, already discussed in some depth in relation to the Morison's Haven glassworks, there are various drafts of a contract between John Scarlett, 'Citizen of York Mercht Venturer Manadger of the Saill Cloth manufactorie att Leith and trustee for the same and Burges Guild brother of Edinb'[8] and the 'Right Honourable Earle of Wemyss'.[9] One of these appears to be the copy of a formal agreement, dated November 1711, but is unsigned and in poor condition, with a large area illegible due to paper damage. Nevertheless, it, together with other drafts, provides considerable new information about the site of the Wemyss glassworks and the type of working agreement deemed necessary by entrepreneurs in the industry.

The paper is headed 'Contract ... for the lease of glassworks at Weemyss', and covers 'All and whole the great cove [cave] situated near the shoar in the Lo[rdship] and Barronie of Weemyss lying midleway between the touns of Easter and Wester Weemyss together also with the glass furnace ovens and caves baith within the sd cave with the grass ground ...' Further confirmation that a glasshouse already existed in the cave is contained in an undated letter from John Scarlett which speaks of a tack or lease of 'the cave with the furnace wherein already built does lye, as well as of the cave and furnace themselfs'.[10] There is a detailed description of the ground to be leased, which, as well as the cave and adjoining shore, included twelve acres of arable and grass land around the cave, 'including half of the water pond' in the lower south end of the earl's easter park, as well as a small piece of cornland on the south side of the cave, bounded by a dyke on the east, west and south. It also included a strip of ground joining a road 'for carying of coalls and other materialls from his lo[rdship's] coall hills and other places down to the sd cove and glasswork built therein'.

The tack granted the right to look for and dig clay, stone and sand on all the earl's land, except his parks, yards, and the entry to his principle house of Wemyss, unless given permission to the contrary, for the 'use benefitt and improvement' of the glassworks or buildings, provided any damage was paid for. It also included full rights to 'cutt carry away and burn unto kelp the sea ware and land weads' on the shore and rocks and 'soe farr as they can reach and cutt into the sea'. John Scarlett expressed concern in his letter to Andrew Hutchinson of 6 September 1711 that there was to be no right to burn the kelp on the earl's or his tenant's land, to which David Fearn, the advocate acting on his behalf, replied 'Mr. Hutchinson sayes that all may be burnt in the glass house itself', some indication of the extraordinary size and airiness of the cave. (Fig. 28 shows the topography of the area in 1854).

No rights to the harbours of East and West Wemyss were granted, but the tack included the power to 'cause build or make an harbour in any creek or cliff near the said cove upon the shoar let to him by this present tack', to enable materials to be imported, and the finished goods shipped out. If such a harbour were built, or improvements to the glasshouse made, the earl was bound either to pay for them during the term of the tack, or when it was terminated, at a valuation according to their condition at that time, to be established by six independent tradesmen: two wrights, two smiths and two masons.

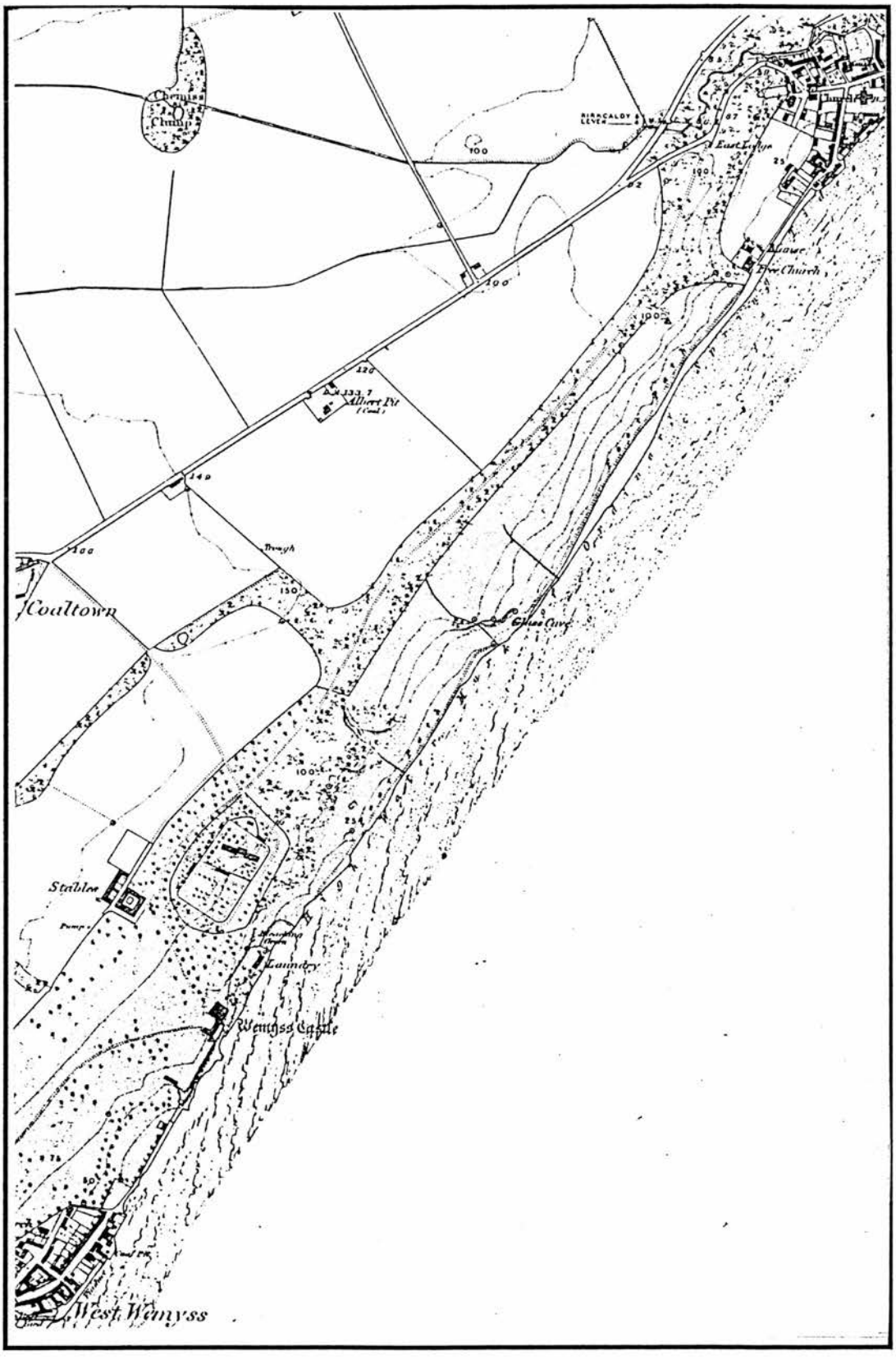


Fig.28. Site of the Glass Cave at Wemyss. (OS, Fife and Kinross, 1854. Courtesy NLS)

One significant clause in the agreement stipulated that the Earl of Wemyss or his agents should 'have always in reddiness upon his coall hills the number and quantity of one hunder and sixty loads of great sea-coll or chin: coll, each load weighing at least eighteen ston of iron weight'. Transport to the glassworks was to be paid for by the tacksman, who could take whatever quantity of coal was required, at any time, at an agreed price. However, if the supply of coal should fail, the tacksman could give three days notice of his intention to obtain coal elsewhere, in order to keep the furnace going. It is clear from this agreement that Scarlett and Hutchinson were determined to avoid the problems experienced at Morison's Haven, when the coal supply had failed and glass production stopped.

The tacksman could terminate the lease at three-yearly intervals, provided he gave six month's notice and had no outstanding debts, while the Earl of Wemyss agreed 'neither directly or indirectly to encouradge an other glas worke within his said barronys of Weymis or Methill or to afoord any matterials for any glass worke with his Ldships said teritories' while the Wemyss glasshouse was in operation.

John Scarlett was empowered to take on any co-partner he wished, and undertook to pay a yearly rent of £4 sterling for the cave, furnace, etc., and £2 5s sterling for each acre of ground, a total of £32, to be paid from Martinmas to Martinmas, the first year's to be paid in advance on the signing of the agreement. He also agreed to pay the same for the earl's coal as everyone else, but 'not exceeding six and halfpenny sterling for each horse loade, at the dearest rate of the said coals, within 14 days after his Lordships coals grieve shall have given in his bill', and to buy all his coal from the earl so long as he complied with the conditions set out in the agreement. The length of the tack is not stated in the damaged contract, but another draft says it was to be for thirty-one years.

The type of glass to be made at Wemyss is not specified, but a letter from John Scarlett to Andrew Hutchinson, dated 7 September 1711, asks for details of the cost of producing a gross of full weight chopin bottles, 'not what you can affoard them for, and have profit by them but what they really may stand to, all costs and charges payd. I know that the price of the raw materials and ingredients will alter the price of the bottles but I want to know what they stand to, when the materials are being had at a moderate price.'[11] It does, therefore, seem likely that the Wemyss glassworks was intended for bottle production.

The agreement was definitely signed, and work on the glasshouse was certainly proceeding, before the sudden death of John Scarlett in March 1712, which probably caused the collapse of the whole enterprise. Also in the Fearn papers is a signed agreement, witnessed by David Fearn among others, between Andrew Hutchinson 'Master of the Glass work at the Weems in Fife' and 'David Phillips in North Leith founder', binding David Phillips to serve 'as a teazer and founder in the said Andrew his glasswork' for three years. The agreement is dated 'the second and twenty ninth dayes of February' 1712.[12]

David Phillip's contract is significant beyond confirming that the Wemyss glassworks was a serious enterprise; it sets out very clearly the importance to the proprietors of ensuring that the expertise of their employees should be protected, and as such is worth quoting in some detail:

> the said David shall not absent himselfe from the said work neither by day nor by night without the speciall consent and leave asked by him and given by the said Andrew Hutchinson or his clark ... And that the said David shall not direct teach or instruct any person or persons by word writting or otherwayes But shall his secrets keep as to any thing he does know or shall see done in the mixing of mettal or performing the art of glass mixing or mettal making and that for the space and time of three years ... To all which articles and conditions he ... binds and obleidges him ... under the penalty of five pound sterling money to be paid by him ... to the said Andrew Hutchison ... for every discovery of such fault Suchlike he the said David Phillips hereby binds and obleiges himselfe neither to wrong him the said Andrew Hutchinson of any of his ingredients or glasses made or see him wronged by any person or persons without giving the said Andrew ... timely notice or intelligence thereof under the forfeiture of five shillings money foresaid for every such fault committed or seen committed...

He also bound himself to be of good behaviour, a common feature of such agreements. He was to be:

> obsequiously obedient upon all occasions to all the orders and rules prescribed ... for the good sober and orderly management of the said glasswork ... as well in relation to the work itselfe as to sobriety good moral life and peaceable behaviour towards one another in and about the said work.

Hutchinson agreed to pay him five shillings sterling a week to provide a house for him and his family, rent free, with small coal and cinders for one fire when necessary. He also undertook to pay the cost of 'removing the said David his goods and family by water from Leith to the town of Weems'. David Phillips signed with crudely printed initials, clearly being unable to write. Equally clearly, he was being poached from the Leith glassworks, which raises the question of where it was intended by Scarlett and Hutchinson to obtain the rest of their workforce - the most obvious choice being Morison's Haven, particularly as Hutchinson claimed to have brought a team there with him.

Much work remains to be done on the Wemyss glassworks, particularly since the events described above imply that, despite considerable investment, it is possible that no glass was actually produced there in the eighteenth century. Among the outstanding questions are those arising from David Lord Elcho's apparently abortive establishment of a manufactory, and whether the death of John Scarlett put paid to the later enterprise set up by Alexander Hutchinson. Without access to the archives at Wemyss Castle, however, it is unlikely that these questions will be answered. Nor, perhaps more importantly, will it be possible to examine further the much earlier glassworks of the Hay period. This is particularly frustrating because Wemyss is the only named site of an early seventeenth century glasshouse.

Kirkcaldy

It is some measure of the scarcity of information about the Kirkcaldy glassworks that, in *Historic Kirkcaldy,* published as part of a series of burgh surveys, the only evidence of its existence was the street name 'Glasswork Wynd' on an 1824 plan of the town.[13] The text reads: 'Glasswork Street ... Presumably glassworks stood in this area, but no evidence has been found.'[14] The material which has come to light during research for this thesis is slight, but it is now possible to establish that the glassworks was operating from at least 1717 to *c.*1726, and that bottles were made there.

The first mention of a glassworks at Kirkcaldy, which has so far been found, is contained in the papers of the Admiralty Court, and concerns the case Swinton v. Wallace, dated 1718.[15] Alexander Swinton of Strathore alleged that Patrick Wallace senior, merchant in, and provost of, Arbroath, and John Mitchell, merchant in Arbroath, owed £44 sterling to 'Richard Soame master of the glass work of Kirkaldie' for forty-four gross of glass bottles 'which were sold and delivered be the said Richard Soame to them in the month of June last by past or thereby.' Richard Soame had

assigned the money, less £3 paid to him, to Alexander Swinton in 'Janry last by past'. It can thus be inferred from these dates that the glassworks must have been in operation in 1717.

The description of Richard Soame as master of the glassworks is of particular interest. It seems very likely that he is the same Englishman described, somewhat disparagingly, by William Morison of Prestongrange's lawyer as 'a mere projector' with 'no substance to performe', when he showed interest in leasing the Morison's Haven glassworks 'immediately after the rebellion', presumably shortly before taking on Kirkcaldy.[16]

The site of the glassworks was, like the others on the Firth of Forth, very close to the shore, although some distance from the harbour. The position of the street to which it gave its name can clearly be seen on Wood's plan of 1824, but no plan of the exact location has yet been found. (Fig.29).

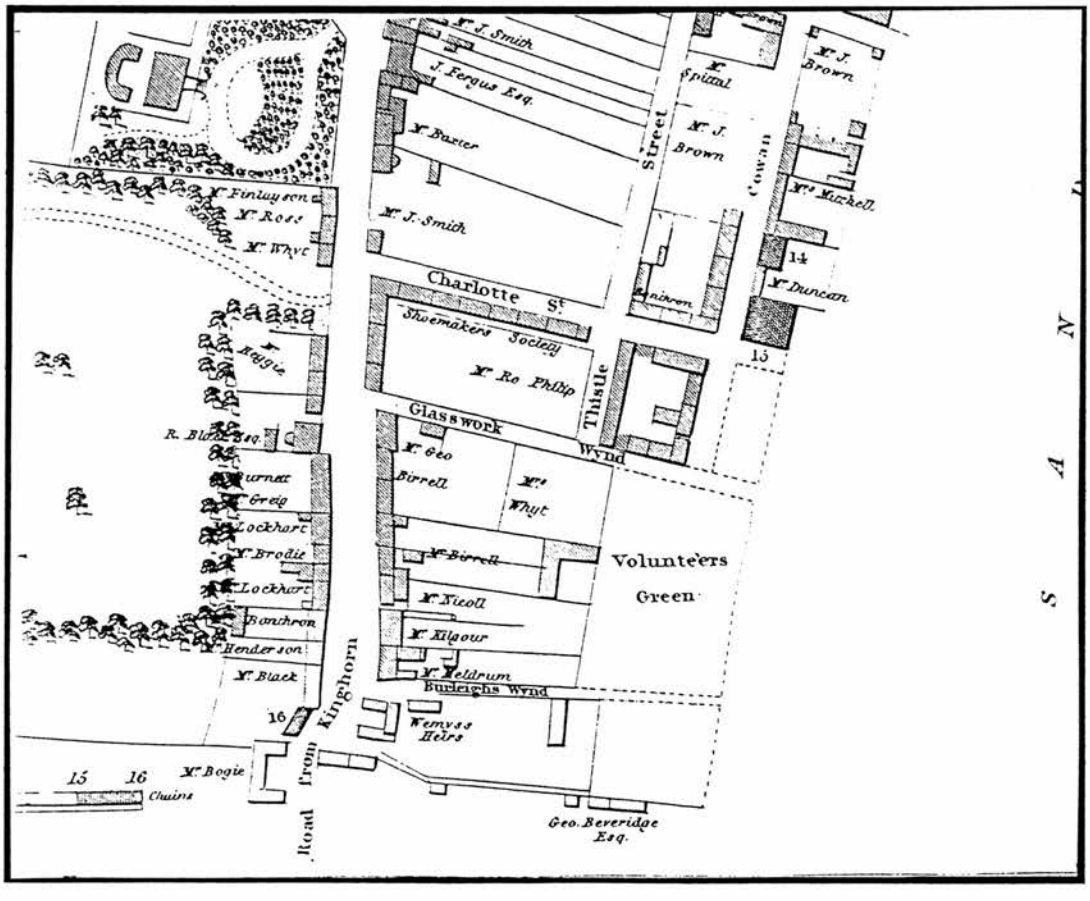


Fig.29. Detail from Plan of the Town of Kirkcaldy, John Wood, 1824. (Reprint, 1992. Courtesy of Scottish History Dept. library).

More information about the glassworks can be gleaned from the Pitfirrane manuscripts in the National Library of Scotland. Sir Peter Halkett of Pitfirrane owned mines at Limekilns, from which he sold coal to the glassworks at Kirkcaldy, Morison's Haven and Leith in the 1720s, accounts for which are recorded. Significantly, some of the people concerned were involved with both the Kirkcaldy and the Morison's Haven glassworks, and there may well have been formal links between the two. The letter from John Colnott, dated Morison's Haven, 29 December 1721, in which he writes of coal sent to both places, has already been mentioned on page 252, in the chapter on Morison's Haven.[17] A slightly earlier letter from him, dated Kirkcaldy, 20 December 1721, also addressed to Patrick Angus, factor at Limekilns, reads 'Sir, I desire that you will as soon as possible you can send such a load of coalls to Mr. George White's Glass house at Kirkcaldy as you used to send for acct. of Mr. Fordyse and Cambolt to our Glass house at Morrisons Haven ...'[18] There are further orders for coal for the Kirkcaldy works from John Colnott in 1722 and 1723.[19]

Further evidence that the two glassworks may have been under the same management is contained in another case heard by the Admiralty Court: William Ferguson merchant of Kirkcaldy v. James Douglas, merchant of Dalkeith 'for payment for bottles sent over the Forth in the boat of Alexander Howison.'[20] The case concerns thirty gross of bottles for wine, which were shipped to Fisherrow (Musselburgh) and then by cart to Dalkeith.[21] The bottles cost 18s (presumably sterling) a gross, and they were dispatched on 20 June 1720. Two of the men who gave evidence to the court, John Thomson 'one of the blowers of the glassworke at Kirkaldie aged fourty eight years, married' and James Love 'bottlemaker in the glassworke at Kirkaldie aged twenty four years and upwards married', are known to have worked, both before and after that date, at Morison's Haven.

The case itself concerned the quality of the bottles, eight dozen of which were alleged to have broken when filled with wine, causing the recipients considerable loss. Thomson and Love gave evidence that they were 'sufficient ... as to syze and metle when they were packt', having been carefully selected from the hundred gross available, and that they were carried in hampers and transported on sledges from the warehouses to the boats. Ferguson argued that the problems must have been caused by the land carriage to Dalkeith, since bottles were not usually transported in carts.

William Ferguson, a prominent citizen of Kirkcaldy, appears to have owned the glassworks, at least by 1720. Council records show that he was elected councillor in September 1715 and became provost in December 1717.[22] He died in October 1723[23] and on 14 July 1726 'the Glass Work and Office-houses, and diverse Tenements in Kirkaldy, which pertained to the Deceast provost William Ferguson there' were offered for sale by voluntary roup.[24] The glassworks is not mentioned in his testament dative, although among the many debts due to him are £7 owed by John Imrie, glassmaker in Leith, and a bill, dated 14 April 1721, by John Thomson, glassmaker, which had been registered and protested in the Kirkcaldy burgh court books.[25]

A sasine of land disponed to William Ferguson, merchant in Kirkcaldy, on 7 December 1713, fits the description of the areas adjacent to Glasshouse Wynd, and may be the site on which the glasshouse was built, but without more information about the adjoining tenements, it is impossible to know on which side of the present street it was situated. It reads:

> All and haill that tenement of land lying within the said burgh on the south syde of the hie street therof, bounded betwixt the tenement of Mathew Oswalds airs on the South the tenement of the airs of umql Mathew Anderson on the East the tenement of Thomas Whyte elder and now of John Williamsons airs on the west and the said hie street on the north pairts thereof And sicklyke All and Haill that yeard belonging to the said tenement upon the South pairts thereof whereupon there is tuo little houses built already side wall hight. Bounded betwixt the tenement and yeard belong to the said Mathew Anderson on the East the said John Williamsons tenement and ane vennell on the west the tenement of Mathew Oswald on the north and the sea flood on the South pairts thereof.[26]

Hopefully more information about the Kirkcaldy glassworks will come to light in the future.

[1]W.A. Thorpe, *English Glass* (London, 1949), 116.

[2] S.G.E. Lythe, *The Economy of Scotland, 1550-1625* (Edinburgh, 1960), 42.

[3] *APS* x, 179.

[4] NAS, RD2/81/848 and RD12/38/1088.

[5] *Scots Peerage*, ii, 282.

[6] Sir W. Fraser, *Memorials of the Family Wemyss of Wemyss,* i (Edinburgh, 1885),

330.

[7] *ibid*, i, 330.

[8] There is no record of him in the published lists of Edinburgh burgesses.

[9] NAS, GD1/576/15. Papers of David Fearn WS. Contract for lease of glassworks at Wemyss.

[10] NAS, GD1/576/15. Papers not individually numbered.

[11] NAS, GD1/576/15.

[12] NAS, GD1/576/15.

[13] E.P. Dennison Torrie, and R. Coleman, *Historic Kirkcaldy: the archaeological implications of development* (Edinburgh, 1995), 62.

[14] *ibid*, 72.

[15] WRH, AC9/641. Admiralty Court papers, Swinton v. Wallace.

[16] NAS, GD1/576/8. Fearn Memorial. The Fearn papers also contain an account 'due by Mr. Soams to Pr.Grange 1716', which includes charges for ashes, wood and coal. Kirkcaldy is not mentioned, but it is possible that the items purchased were intended for the glassworks there, which would put the date of the glassworks forward to 1716.

[17] NLS, Ms.6437 f.43. Halkett of Pitfirrane mss.

[18] NLS, Ms.6437 f.44.

[19] NLS, Ms.6437 f.31, 32; Ms. 6438.

[20] WRH, AC9/680. Ferguson v. Douglas.

[21] It is interesting to speculate on the reasons for buying bottles in Kirkcaldy, when they were also being manufactured in Leith and Prestonpans, which were much nearer to Dalkeith. One possibility is, of course, that the Morison's Haven fire was out at that time.

[22] Town House, Kirkcaldy, KDY/1/1/2.

[23] NAS, CC20/4/18/300.

[24] *Edinburgh Evening Courant* 5-8 July 1726. My thanks to Sheila Forbes for reference.

[25] Unfortunately, the court book for 1721 is missing.

[26] NAS, B41/2/4 (103). Kirkcaldy Burgh Register of Sasines.

CHAPTER 10

PORT SETON

The site of the next glassworks to be discussed is only about one and a half miles east of Morison's Haven, in the adjoining parish of Tranent. Once again it was built near a harbour and close to the coal mines which were to provide the fuel. Information about the Port Seton glassworks comes mostly from material concerning two large English institutions, both involved in dubious financial dealings in Scotland: The York Buildings Company and the Charitable Corporation for the Relief of the Industrious Poor. It is often difficult, and sometimes impossible, however, to disentangle the affairs of the individual employees and managers from those of the institutions themselves. The involvement of Robert Hackett, Thomas Fordyce and Archibald Campbell of the York Buildings Company with the Morison's Haven glassworks has already been mentioned, and their roles in the establishment of the Port Seton glassworks will now be explored, as will those of other, better known, Scots. It should be remembered, though, that in terms of their Scottish enterprise as a whole, the production of glass was of very minor importance to the company, justified only by the necessity of encouraging industries which would consume the coal produced on their estates.

The whole phenomenon of the expansion of the York Buildings Company, from London water suppliers to the largest corporate land owners in Scotland, has been fully explored by A.J.G. Cummings in his Ph.D. thesis 'The York Buildings Company: A Case Study in Eighteenth Century Corporation Mismanagement' (Strathclyde, 1981). He has also written specifically about their Scottish industrial enterprises in an essay, 'Industry and Investment in the Eighteenth Century Highlands: The York Buildings Company of London'.[1] These, together with David Murray's book *The York Buildings Company, A Chapter in Scotch History*, first published in 1883, provide a detailed history of the firm and the machinations of its members, so only a brief summary is appropriate here.

The original letters patent of the company were granted by Charles II in 1675. Incorporated in 1691 as the Company of Undertakers for Raising the Thames Water in York Buildings, the business was a highly respected concern, which fulfilled the role for which it was founded, for many years.[2] In 1719, however, during an

extraordinary speculative boom, typified by massive public investment in the South Sea Company, Case Billingsley, one of the leading London speculators, realised that the York Buildings Company charter had imposed on it no land-holding restrictions. He knew that the government was having difficulties in disposing of the estates forfeited after the 1715 Jacobite uprising, and saw the opportunities to be afforded by their purchase. With five associates, on 19 March 1719, Billingsley bought the whole stock of the York Buildings Company for £7,000 sterling.[3] The Duke of Chandos was elected governor, and in October of that year, a joint stock fund of £1,200,000 was floated, with the aim of buying up the forfeited estates in Scotland, and other land. The fund was over-subscribed and when several Scottish estates were auctioned, also in October 1719, they were bought by the company's agents. The estate with which this thesis is concerned, that of the 5th Earl of Winton, was bought on 10 October 1719, by Robert Hackett and John Wicker for £50,300 sterling, the third largest price paid for an estate in Scotland.[4] It was transferred to the York Buildings Company on 6 April 1720.[5]

The net rental obtainable for the Winton estate was estimated by the commissioners for the forfeited estates to be £3,446 sterling, of which £1,000 was for the coal and salt pans.[6] The commissioner's survey of 1716-17 noted that there were twelve salt pans and two coal heughs on the estate, the rental of which could only be estimated because the books had not been kept regularly. The South Sea 'bubble' burst in 1720, having the knock-on effect of a huge fall in the value of the York Buildings Company shares, which caused delays in payments to the commissioners, and led to further unwise (to put it kindly) money raising measures, which it is unnecessary to describe here.[7]

Before further discussion of the York Buildings Company activities, it would also be appropriate to give some brief details of the Winton estate itself, and its owners. The activities of the catholic third Earl of Winton (c.1584-1650) in allowing the Italian glassmakers from Morison's Haven to attend mass at Seton House in the 1630s have already been mentioned in chapter five. It was he who built the twelve salt-pans in Cockenzie, and a harbour, which was, however, destroyed by a storm in 1635.[8] The Seton family were loyal and consistent supporters of the house of Stewart, who entertained members of the royal household on several occasions at Seton House. The third earl accommodated James VI and his court for a night, when he visited Scotland in 1617, while Charles I and his entourage stayed there both en route to his coronation in 1633 and on his way back to England.[9] In 1679 the Duke of York, the

future James VII, while on a visit to Scotland, was entertained by the fourth earl who, incidentally, bought two dozen 'flint cristall glasses' specially for the occasion.[10]

George, fourth earl of Winton (1641-1704) built a new harbour at Cockenzie 'called for distinction of the west harbour "Port Seton"'.[11] According to Smout, he employed a German engineer to create 'one of the finest harbours on the Forth', from which he traded with Norway and Holland.[12] He was a protestant, as was his successor, again George, the fifth earl (1678-1749), who succeeded to the estate in March 1704. The fifth earl, described in the *Scots Peerage* as 'a zealous Protestant', who was 'suspected of Jacobite views'[13] was declared a rebel, having failed to appear when summoned to Edinburgh in September 1715. The character and exploits of this interesting man are fully described by George Seton.[14] It sufficient here to note that, having been sentenced to death for his part in the 1715 rebellion, his estates were forfeited, (he escaped from prison, however, and lived out his life in Europe). Most of the forfeited estates were solely agricultural, but the Winton estate was particularly desirable. Robert Calder, in a typically ingratiating literary dedication of that period, wrote of it in 1708: 'very few in the kingdom have so plentiful estate as your Lordship, and none so contiguous, compact and convenient, both for sea and land, for casual and real rents, for advantages of salt and coal, with the accommodation of pleasant and well inhabited towns and villages, all belonging to yourself ...' [15]

As well as enjoying the advantages of coal deposits near to the coast, and a shore suitable for salt pans, the Winton estate possessed the two harbours mentioned above, the smaller, at Cockenzie, having been created a free port in 1591, when the town was erected a burgh of barony.[16] Just to the east of Cockenzie was the harbour of Port Seton, constructed by the fourth earl in 1679, large enough to enable ships of 300 tons to berth.[17] The close proximity of the two harbours can clearly be seen in John Adair's map of the parish of Tranent of 1688.[18] (Fig. 30). They are, in fact in separate burghs of barony, but references to the harbours often appear to confuse the names. Indeed the official disposition of the Winton estate, written and signed on 23 July 1731 by the Commissioners for the Forfeited Estates, describes the burgh of barony of Seton and Tranent and a charter granted to George Earl of Winton by James VII on 31 July 1686 'together with the free burgh of Cockenzie called Port Seton'.[19]

The potential for industrial development on the Winton estate is clearly demonstrated in the abstracts of rentals compiled by the commissioners for the forfeited estates in 1716-17.[20] Of the thirty-eight estates assessed, only Panmure was estimated higher

Fig. 30. Cockenzie and Port Seton. Detail from 'A Mapp of the Parioch of Tranent with the Port of Seaton', John Adair, 1688. (Courtesy Edinburgh University Library.)

than the Winton rent of £3,456 sterling. The Panmure estate produced much higher cash rental, but the only non-agricultural product was linen. As was common practice in Scotland at that time, a considerable proportion of all the rents was payable in kind, varying from butter and capons to cereals and carriage of coals. Winton also offered coal mines, salt pans and a viable harbour, advantages quickly seized upon by the York Buildings Company, which wasted no time in attempting to develop its assets. They enlarged the harbour at Cockenzie and, in 1722, built the first railway in Scotland, linking it with the coal pits at Tranent, some two miles away.[21] They also installed a steam engine at the Tranent coal mine, putting them, Cummings suggests 'at the forefront of technology',[22] spending a total of £3,500 sterling on improvements to the estate.[23] Considerable quantities of coal were subsequently shipped to London, but this venture, like so many others, was doomed to failure.

On 11 November 1721 the York Buildings Company leased the barony of Tranent to Thomas Mathie, a Cockenzie merchant, and John Horsely, their agent, at £795 per annum.[24] The coal works were leased to the same men on 15 May 1722, and the saltworks and harbour of Port Seton on 2 February 1723, for a total combined rental of £1,000, the amount which had been estimated by the commissioners for the forfeited estates. Mathie could not make sufficient profit to pay the rent, however, and he petitioned to be released from his tack in July 1734,[25] claiming that the pits had been in ruinous state when he took them over and that the coal was very crumbly, eleven twentieths being culm, or small coal, only useful for salt pans or lime kilns.[26] Another part of the estate, the baronies of Seton, Longniddry and Winton were let to George Buchan of Kelloe, a 'confidential correspondent' of the York Buildings Company, on 11 November 1721 for thirty-one years.[27]

Severe financial difficulties forced the company to make plans to sell the Winton estate in 1727, but they were opposed by the annuitants, and had to continue to lease it. In August 1727 William Adam the architect (1689-1748) took over the lease of the barony of Tranent and Cockenzie, and the harbour at Port Seton for twenty-two years, at a rent of £640 sterling a year. He also obtained, at Martinmas 1728, the lease of the coal and salt works at Cockenzie and Tranent for twelve years, for £450 a year.[28] Adam, whose involvement in numerous enterprises, apart from building, will be discussed below, was an agent for the York Buildings Company, as well as being factor on the forfeited estate of East Reston. Also in 1727 a new lease was obtained by George Buchan for Seton, Long Niddry and Winton, at a rent of £1,400. So from 1727, as Cummings points out, the whole of the Winton estate was leased to the

company's own agents. Even this may not be the full story, because William Adam was employed as salt grieve at Cockenzie in 1716 and 1717,[29] so he was obviously involved with the estate well before the advent of the York Buildings Company.

Precisely when glass making began at Port Seton is unclear. There is no doubt that a new furnace was built in 1727, and that the company financing and controlling it was established in 1728, as will be explained. There is, however, the possibility that some glass making activities had taken place on the estate before that. We know that Robert Hackett, Thomas Fordyce and Archibald Campbell, all agents of the York Buildings Company, were involved with the Morison's Haven glassworks, and that they were all adept at putting their own interests before those of the company. Attempting to piece together a reasonable picture of the wheeling and dealing of a group of early eighteenth-century entrepreneurs and their associates is difficult at the best of times, trying to make sense of the few items of evidence in the archives relevant to Port Seton is virtually impossible. It does seem reasonable, however, to present such material as is extant, in the hope that more will eventually be found, and that a more complete picture will emerge. The hypothesis will, therefore, be put forward, albeit tentatively, that there were glassworks at both Morisons Haven and Port Seton in the early 1720s, during which period there was clearly something of a hiatus, before the estate was leased as described above.

The suggestion that there may have been glassmaking activity at Port Seton during the early 1720s, and possibly before, is based on several small details in the extant material. There are four puzzling entries in the Prestongrange factor's account book, in which, between 27 May and 25 July 1717, he listed the receipt of four payments for the delivery of kelp to Cockenzie, seven cart-loads in all.[30] It is hard to imagine what they could have been used for, other than glassmaking. Hackett's comment that 'Morrison and Winton are to be joyned together for glass works, bottles etc.' in June 1721[31] has already been mentioned on page 251, and seems very premature for a company not actually formed until 1728. In a letter of 7 September 1721, John Cockburn of Ormiston (c.1679-1758), who was an assistant governor of the York buildings Company, M.P. for Haddingtonshire and Commissioner of the Admiralty, wrote to an un-named correspondent in Edinburgh: 'I confess I doubt much of this glass undertaking going long on, but I don't see wherein we can suffer tho' they should blow up & if I should be mistaken & that they should carry on their business itt must be ane advantage to us to have them '*upon our estates*.' (my italics).[32] Since the York Buildings Company never owned the Prestongrange estate, this certainly seems

to indicate that he was talking about the Winton land. It also appears from Cockburn's tone that the company itself was not directly involved, although, of course, the company or its members may well have been putting up some of the capital. Another letter of 21 September 1721 further implies that Cockburn was discussing a glassworks at Winton:

> I am intirely of opinion that it is for the advantage of the company to have the glass works established upon the estate, manufactorys of all kinds must increase the consumption & particularly of our coall, butt I would nott have the company any way in their power, for I have the same opinion of Hackett & of all that I hear of being concerned with him in the undertaking, so I shall always endeavour to be upon my guard when I treat with him or any of his gang ... [33]

We know that Robert Hackett had definitely leased Morison's Haven glassworks and had spent £6,040 sterling on it by October 1723. Half of his funding came from the York Buildings Company, but whether it was simply a loan, or a more formal arrangement, is unknown.[34] (The source of the remaining £3,000, said by Cummings to be Hackett's own money, must also be open to speculation.) It is possible that Hackett, Fordyce and Campbell, and other unknown associates, also set up a glassworks on the Winton estate, probably before 1721. It appears that Robert Hackett was subsequently removed from the Winton glassworks, by the York Buildings Company, judging by comments in Cockburn's letters. Written on 26 October 1721 one intriguing letter, mostly concerned with the company cash-flow problems, contains a lengthy post-script:

> Whatt is above was writt in the morning. As I came outt of the house today Mr. West [Richard West, assistant to governor, YBC] putt some papers into my hands & desired me to read them. I find they consist of a letter from Mr. Cole [Christian Cole, on committee of the YBC] of the 19th & a memoriall from Messrs Ffordice & Campbell with ane estimate of the glassworks. I am very sensible that the Company suffered very much by the management the first year, butt if any exchange can be gott [?] [?] their can be no danger if bills are drawn upon the company. Butt whatt makes us nott remit money so fast as you desire, is that we have itt nott.

He goes on to talk about the coal and salt on the Winton estate, then:

> I confess I in my private opinion, think their memoriall is gross, butt I assure you I shall say nothing upon the subject here ... among other things I spoke with a gentleman some days ago who mett Mr. Hackett accidentally in company ... & there heard him complaining against the

> siezeing his glass works & he said that he would lett you go on for some time, butt he would make you pay for whatt they had done, for they were considerably in his debt & he would in a little time make who ever meddled with it acct to him. How far itt may be reasonable for the company to engage in a wrangle about a thing which they have nothing to doe with, I shall leave to others to judge.[35]

Cockburn's earlier letter of 7 September 1721 had also mentioned 'Hackett's being turned out of the company's service', but Hackett appears to have remained in control of the Morison's Haven glassworks until October 1723, since he offered at that date to "make over and convey the said Glass Works to the Company or their Order, to remain to them and their assigns until they shall be paid the said sum of one Thousand Pounds',[36] so it seems reasonable to suggest that he had been removed from a glassworks on the company's property at Winton. The implication of Cockburn's letters is that Hackett had fallen out with Fordyce and Campbell, who had certainly been in partnership (or more accurately league) with him. In an undated, unsigned, summary of material concerning Robert Hackett is a copy of the following agreement:

> Robert Hackett Esq. purchaser of the estates of Winton Panmure Kilsyth, East Restoun, ... constitutes Thomas Fordyce writer in Edinburgh & Archibald Campbell writer to the signet Agents to him, with power to hold court, lett, sett, discharge, remove, decide cases & execute them, & to be answerable to none but the said Hackett, who can despose them at his pleasure. done by Mr. Mather Mackell advocate & procurator for Mr. Hackett in the presence of the Lords of Councill & of Sessions' dated ?September 29.[37]

This agreement would certainly appear to have been in Hackett's, rather than the York Buildings Company's, interest. Hackett was also said to have written on 13 December 1720 that 'the Governor & Company have agreed to grant him leases of the first purchases, & therefore they are desired to continue their care thereof on his account... He praises their fidelity very much ... orders them to send him some koales, salt, bottles etc. to London.'[38] The bottles could, of course, have come from Morison's Haven.

It appears, then, that Robert Hackett intended to lease the Winton estate from the York Buildings Company, and may, indeed, have actually done so on a short-term basis. He appointed Fordyce and Campbell as his factors: 'You have my Factory upon the whole estates ...', told them all the accounts due for 1720 were payable to him, 'then charges them with the care of the glass house. He says Mr. White goes down in

few days to little England (so he alwais calls the glass works)'.[39] Hackett appears to have put this Mr. White and a Mr. Lonsdale into Seton House and complained in a letter of 23 December 1720 that they disagreed. 'He thinks the house big enough for them both, & sayes he will make it serve several other families & a manufactury.'[40] It is interesting to note that a George White was running the glassworks at Kirkaldy in 1721, (see page 272). In March 1721 Hackett commented 'I am glad Mr. White of the glass house is returned thether, that affair is very liked here, & will I believe prove of good account when others faile.'[41] A letter from Richard West and Robert Wolsted (committee member of the YBC) from London, in September 1721 to John Hackney in Edinburgh, said that they had been asked to speak to Robert Hackett 'that White may be sent away from Seaton House', but since it was very difficult to find Mr. Hackett, they should turn him out of the house themselves.[42] Since John Colnott was in charge of the Morison's Haven glassworks at that time, the question of Mr. White's role at Seaton House is a pertinent one, as is the type of manufactory planned there. However, White (or another glassworker of the same name) appears to have been working at Morison's Haven by 1722, since there is an entry in William Henderson's account book on 30 May: 'To Esq White one of the head svts at the glass work having PG [?letters] to give him all possable encouragement £28 10 0,'[43] an entry which may imply recent arrival, and the possession of desirable expertise.

The letter from Wolsted and West went on to comment on Fordyce and Campbell's duplicity, to the considerable detriment of the company. Fordyce and Campbell defended themselves against the accusations made about them in a letter to the York Buildings Company in December 1721, insisting that, since the company had invested such comprehensive powers in Robert Hackett, they naturally thought they had to obey him, and that self-gain was the last thing on their minds. The penultimate paragraph reads: 'It's a pitie to see so noble a work as the Glasswork is, perish. And therefore wish you would please give the company a good impression of it, so many things concurring to make it a valueable work to them.' [44]

So - the questions remain - was a glasshouse built on the Winton estate, during the period when Hackett and his cronies had control, and before the baronies of Cockenzie and Seton were leased out by the York Buildings Company in November 1721? Was George White installed at Seaton House in order to set up a glassworks? And if it *was* built, did it continue to operate between the end of 1721 and 1728? Only one direct reference to a glasshouse at Port Seton before 1728 has come to light: in a long list of documents produced in the Court of Session at the end of the

eighteenth-century is an item described as 'Agreement not to subject the York Buildings Company to the penalty of the articles as to the lease of the Glassworks at Port Seton between the York Buildings Company, Thomas Fordyce, John En?ar and William Adam, 9th August 1727'.[45] This does point to the likelihood of an earlier glassworks, but is not sufficient to be certain, especially as some of the material quoted above could refer to Morison's Haven, despite the inconsistencies. It is certain though, that Hackett siphoned money from the Winton estate into his own pockets, and probably those of Fordyce and Campbell, and that they were all unscrupulous opportunists.

It is also certain that a new glassworks *was* established in 1728 at Port Seton, on a site near the harbour, shown on an undated, but eighteenth-century, plan of the barony of Seton, based on an original drawing by J. Ainslie.[46] (Fig.31).

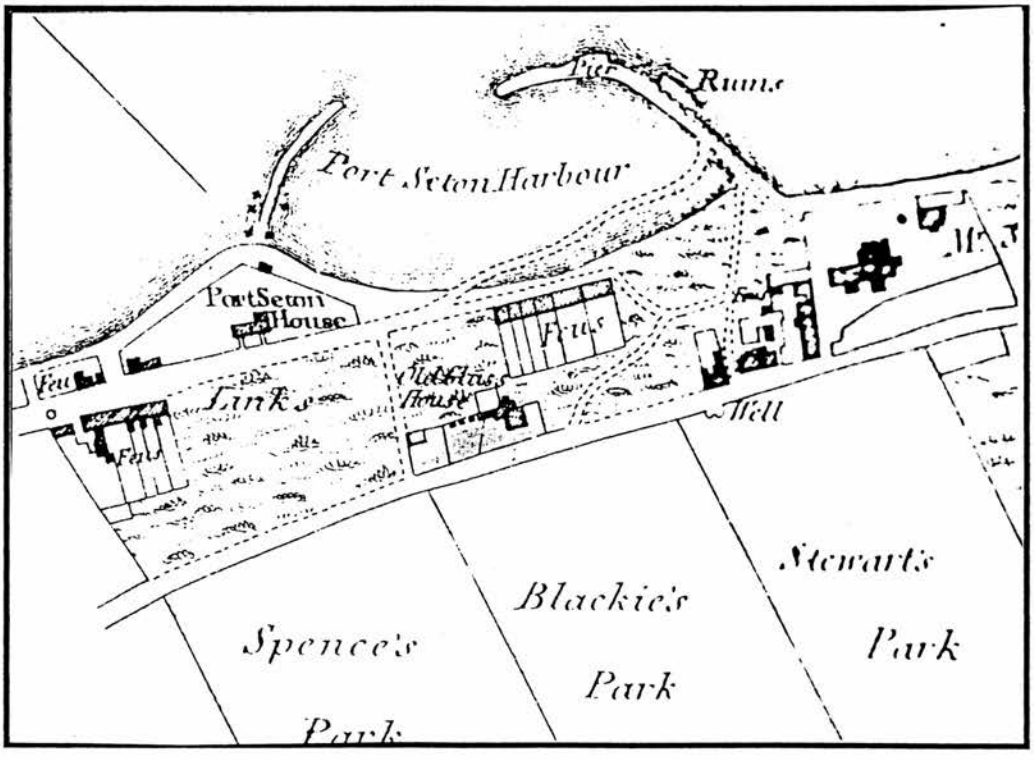


Fig.31. Plan of the Barony of Seton, copied from Ainslie, n.d. (NAS, RHP.3387)

The glassworks was built on land leased by George Buchan of Kelloe, who was also directly involved in its construction. Most of the information about it comes from a small cache of papers in the Grant of Monymusk archives, the central figure being Sir Archibald Grant of Monymusk (1696-1778), nephew of Thomas Fordyce and brother-in-law of George Buchan. The material is, as usual, fragmentary, and the

picture is inevitably a partial one. The enterprise got off to an enthusiastic start but, after apparent early success, was dogged by the usual cash-flow problems, difficulties with supplies of raw materials and incompetence, as well as unfortunate accidents.

It is quite possible, as Cummings suggests, that interest in building a new glassworks was generated by the change of tenants on the Winton estate in 1727, when the whole estate was leased to York Buildings Company agents George Buchan and William Adam.[47] Adam completed the take-over by obtaining the right to the lease of the coal and salt works at Cockenzie and Tranent at Martinmas 1728, for twelve years at a rent of £500 sterling a year, although he only paid £450.[48] His agreement stipulated that he should only pay the higher figure if he 'should happen to lett or lease the same to the partners of the Glassery', or any other industrial works should be built there which would consume £50 sterling of coal a year, neither of which had happened.[49] While the market for coal in London was buoyant, the output of the Tranent mines could be profitably shipped there, but the prices fluctuated widely, and it was of obvious benefit to pit-owners to have local consumers, in addition to the salt pans, to ensure a regular income. From the point of view of William Adam, therefore, a glassworks would consume his coal, the supply of which he had increased by sinking four new pits on the Easter Windygoul part of the estate.[50] He was also, of course, a considerable consumer of window glass in his capacity as architect, so he had a double interest in promoting its production. The only known invoice for glass manufactured at Port Seton is dated 22 May 1730. It lists window glass costing a total of £7 0 01/2, supplied to Sir John Clerk of Penecuik, one of Adam's patrons. The payment was made to 'the copartners of the glassworks' on 12 November 1730.[51]

A brief description of William Adam's entrepreneurial career will serve to show the extent of his commercial interests. John Gifford in his biography *William Adam 1689-1748* (Edinburgh, 1989) describes William's father John as 'the descendant of a line of insignificant Angus lairds'.[52] His mother Helen was a daughter of William, third Lord Cranstoun, a supporter of Charles II, whose estates were confiscated. The family lived in Linktown, Kirkcaldy. William became a mason and travelled to the Low Countries and northern France before 1720. He was credited by John Clerk of Eldin with the introduction of the manufacture of Dutch pantiles in Scotland.[53] On 8 May 1714, Adam and his father-in-law,William Robertson, were granted the sole rights to dig and remove clay within the barony of Abbotshall 'for the Tyle and Brick manufactory to be erected by them in Linktown' for an annual rent of 50 merks, Scots, and 500 pantiles.[54] Robertson also leased the Abbotshall coal mines.

Most of William Adam's commercial activities were, not surprisingly, connected with the building trade. In 1728 Sir John Clerk visited his Linktown brickworks, and wrote in his diary: 'I could not enough admire the enterprising nature of the proprietor who had at that time under his own care near to twenty general projects - Barley Mills, Timber Mills, Coal Works, Salt pans, Marble Works, Highways, Farms, houses of his own a-building and houses belonging to others not a few'.[55] In February 1728 William Adam was admitted as burgess and guild brother of Edinburgh gratis, for services rendered to the town, and he moved to Edinburgh in July of that year. Also in 1728 he was appointed clerk and storekeeper of the king's works in Scotland, and in 1730 mason to the board of ordnance in North Britain.[56]

Adam designed and built numerous large houses for wealthy Scottish landowners, including the Earl of Hopetoun, Sir John Clerk of Penicuik, the second Earl of Stair and the Marquis of Tweedale. Since much of his building work was in East Lothian, free access to his harbour at Port Seton was advantageous, enabling him to land his building materials there, including bricks, presumably from his own brickworks across the Forth.[57] In view of the scope of his business interests, it is not surprising that Adam should have been involved with the establishment of a glassworks so near to his coal pits, his harbour and his customers.

Both Cummings and Murray regard the Port Seton glassworks as a York Buildings Company project.[58] In fact the company put up half the initial capital of £1,500 sterling, the remainder coming from the shareholders.[59] Prominent members of the company were certainly directly involved but the precise extent to which the glassworks was an official York Buildings Company enterprise, was a matter of some dispute. The letter quoted by Cummings as evidence of the company's involvement,[60] although showing that it held seven of the twenty shares in the glassworks, also makes it clear that the then director, Mr. Abell, who visited the glassworks in 1733, said that 'they look upon themselves to have no concern at all in it further than ground landlords, & that the purchases [of shares] made by Col. Horsey must be for his own account since done (as he says) contrary to a particular clause in their charter.'[61] In fact, it was admitted in a case heard in the Court of Session in 1736, when the York Buildings Company pursued William Adam for money they claimed he owed them, that the shares 'were purchased by the Company, or att least by Colonel Horsey for their behooff'.[62] Details of the debit balance in the glassworks accounts were listed under York Buildings Company enterprises in the *Journal of the House of Commons*

in 1733,[63] but not in a notice in *The Daily Journal,* which listed timber, lead and ironworks in Scotland.[64]

Equally difficult to define is the official role of the Charitable Corporation for the Relief of the Industrious Poor, prominent members of which were closely involved in funding and managing the glassworks, notably Sir Archibald Grant of Monymusk (1696-1778). The Charitable Corporation was involved in what Cummings describes as 'one of the greatest financial scandals of the eighteenth century'.[65] The Corporation was set up to lend small sums at low interest, in return for pledges - basically a large-scale pawnbrokers, in which members of the public held shares. The men who controlled the corporation, Sir Archibald Grant, William Burroughs and William Squire, with warehousekeeper John Thompson and banker George Robinson, speculated in corporation shares, using money fraudently borrowed from it. George Robinson cheated the others, who then embezzled further money from the corporation, planning to recoup their losses by investing it in York Buildings Company stock, in which they already had an interest, forcing the price up and then selling. Their plan failed, with disastrous financial consequences for the speculators and shareholders alike. The subsequent parliamentary enquiry resulted in the expulsion of Sir Archibald Grant from the House of Commons on 5 May 1732, at which time his finances were in a parlous state. Grant was fortunate, after lengthy litigation, to retain his property in Scotland where 'he spent the rest of his long life improving his estate at Monymusk, where he is said to have planted over fifty million trees, and mending his shattered fortune by marrying rich widows.'[66]

Whatever the official involvement of the two major public institutions, the York Buildings Company and the Charitable Corporation for the Relief of the Industrious Poor, the people running those concerns were certainly shareholders in the Port Seton glassworks. The glassworks was built by William Adam, work on the site having begun by March 1728. In 1736, Adam claimed that £862 16 7 (sterling) was still owing to him and that 'the Glasswork in Termes of the Contract is not to this hour compleated'.[67] In a letter from George Buchan to Sir Archibald Grant, of 23 March 1728,[68] he referred to 'the Articles of Copartnery of the Glass Manufacture at Portseton and the report offered you by Mr. Adams in the meeting you had last in Edinburgh on that subject'. He went on to say that 'it appears in the judgment of most people ... this work may become profitable to the partners and of benefit to the country', but that the 'framing of the partnery' and setting it up would depend on Grant.

Buchan continued by asking that Grant should discuss the agreement with Colonel Horsey, by then governor of the York Buildings Company, and others, and that he should get it signed by the Duke of Chandos, the Earl of Stair and anyone else he wanted as partners.[69] Buchan had advanced £750 (sterling) 'to carry on the buildings etc.', but pointed out that hiring workmen and buying materials could not be done until the articles of co-partnership were executed. The journal of a local wright, William Dickson, provides evidence that work on the buildings continued, recording on 21 October 1728: 'worken at the harbour ... at the glasshouse 5 days and a haf day', with a further three and a half days work there in April 1729.[70]

The co-partnership was finalised at a meeting on 7 January 1729. Interestingly, the list of co-partners does not include Sir Archibald Grant of Monymusk, although several of his relatives were named, nor does the Duke of Chandos appear. Those present at the meeting of 'the co-partners for erecting & carrying on a Glass Manufacturie at Port Seton' were:

The Lord Drummore
Mr. Anthony Murray
Mr. Hugh Dalrymple
Mr. William Grant
Mr. Alexander Garden
Mr. James Stewart
Mr. Robert Lumsden as proxie for Sir Arthur Anstruther
Mr. Robert Dalrymple for himself and as proxie for the Earl of Stair
Mr. Archibald Robertson as proxie for Colonel Charles Cathcart
Mr. Thomas Belches
Mr. Thomas Fordyce
Mr. William Adam
Mr. George Buchan [71]

Lord Drummore was elected president, and he, Anthony Murray, Thomas Fordyce, William Adam and George Buchan were appointed managers, with Thomas Fordyce in the role of cashier and George Buchan as secretary. The managers were asked to prepare 'proper books' for the management of the company's affairs, and to draw up appropriate rules before the next meeting in March. A copy of the minutes was to be sent to the partners in London, and the secretary was ordered to write a 'letter of compliment' to the governor and court of assistants of the York Buildings Company. A letter to Thomas Fordyce from James King, a glassworker in Parton, Cumberland, was read to the partners in which he offered his services and made proposals about the works. Fordyce was recommended to reply immediately, asking King to go to

Port Seton as soon as possible. (The name of James King recurs in relation to glassworks at Newcastle and Glasgow). Shares in the co-partnership were £100 sterling each, payable in two instalments, on 1 March and 15 May 1729.[72]

Part of the plan for the glassworks appears to have been to corner the market in Scottish kelp, thus ensuring plentiful supplies for Port Seton, and depriving the rival, and long-established, glassworks at Newcastle of an essential ingredient, or at least forcing them to find alternative sources at a greater distance. Lord Drummore spearheaded the drive to establish contracts with kelp suppliers, his tactics appealing to enlightened self-interest, combining a business proposition with an evocation of Scottish patriotism. A letter from Edinburgh, dated 20 March 1729, written by a David Anderson to David Traill of Orkney, and having all the appearance of a 'round robin', is self explanatory:

> Sir, A Society of Gentlemen have entered into a Co-partnery for carrying on a manufacture of all sorts of glass at Port Seton in this firth, where they designe cheifly to use the produce of our own countrey, and to serve the whole nation with glass, whereby a very great sum will be saved that is yearly sent abroad to purchass glass. I observe all the gentlemen of the countrey incline to favour the undertaking as a national benefite, particularly such as have estates on the coast where ware fit for being burnt into kelp may be gott. Most of the gentlemen of Caithness have entered into contract with this co-partnery, by which they have given them the priviledge of all their ware on their severall estates for nine years, upon their paying forty shilling Scots for each tunn of kelp they shall burn there.
>
> As it is the interest and I hope the inclination of every Scotsman to promote what tends to be the common good of the Kingdome, and the saving our money being carry'd out, I know you will likewise concurr in it, and allow these gentlemen the priviledge of your shores on the same conditions as they have from others, and give them whatever assistance you can. Or if you should choise rather to imploy your own servants and labourers to burn the ware and make the kelp, for every tunn or 2000 weight of good and sufficient kelp, well burnt and free of stones or sand they're willing to pay you 35 shillings Sterl. receivable at a good port in Orkney, or 45 shill. per tunn as above deliverable at their works at Port Setton where ther's a good and safe harbour.

> I might add that hereby you have the opportunity of doeing a pleasure to the Lord Drummore and severall other gentlemen of that partnery, which I know will be very agreeable to you.[73]

A partial, undated letter from Robert Dalrymple WS and Hew Dalrymple to the Earl of Stair, confirms the apparent success of this tactic, describing Lord Drummore as 'indefatigable' in providing material for the glass manufactory and claiming to have contracted for almost all the kelp in Scotland, or at least 'of these parts from whence the Newcastle people were supplyed', so putting them 'under a hardship they will not easily get out of.'[74]

The glassworks appears to have been launched with something of a flourish. At the end of 1729 a paragraph in the *Edinburgh Eccho* (sic) informed the public that 'Last week ten horse loads of drinking glasses came here from the Manufactory at Port Seaton, and we are informed that there Mirrors and other pieces of ware exceed any that come from abroad. They have made a monteith with the crown and arms of Great Britain, which is esteemed a masterpiece.'[75] Six weeks later they were advertising for sale crown and broad glass, in whole or half cases or cut to the customer's requirements. 'Also all sorts of flint or chrystal glass, consisting of drinking glasses of all sorts, decantors, lamps, gelly glasses, mustard-boxes, salvers, and vials &c. Glasses for alchymists, and bell-glasses for gardens etc. All at very reasonable fixt rates.' Cullet of all sorts would be bought, either at the works, the shop of William Turnbull, merchant in Edinburgh, or the house of John Stevens, merchant at Leith.[76] By June 1730, the company had set up its own warehouse in the Lawn Market, Edinburgh, and were advertising all sorts of flint-glass, retail and wholesale.[77] Commissions could also be taken for window glass, with the incentive of free putty and delivery, while glaziers could buy at a special discount price.

The list of Port Seton products raises a number of questions. If they really produced broad, crown, and plate glass as well as crystal drinking glasses and other vessels, they must have obtained the services of at least three teams of glassblowers, each with a different skill, together with all the anciliary workers such as plate-glass grinders. The claim that they had made a monteith (a large vessel with a fluted rim, designed for cooling wine glasses, generally found in silver or ceramic) is particularly striking, especially since the crown and arms on it must have been engraved, requiring yet another skill. Whether or not they actually produced the monteith, the 'news item' would certainly have alerted potential customers to the possibility of having their own

coat of arms engraved on fine wares. It is possible, of course, that glass may have been bought in, but that would have been very expensive. Letters which will be examined below, certainly indicate that flint, window and bottle glass was produced at Port Seton, although the quality was variable, and the workforce was quite large. (See Appendix 2).

Taken at face value, the range of items made would have required a very large capital outlay on furnaces, buildings, equipment, raw materials and skilled men. The logistics of maintaining sufficiently consistent output and sales to justify such an investment are complex, involving both the regular supply of suitable raw materials and - that perennial Scottish problem - a market sufficient to absorb the wares produced. Sadly, although on this occasion, the glassworks does not appear to have been critically under-capitalised, failures in materials, marketing and management, led to a rapid decline in its fortunes. In the *Journal of the House of Commons* for 1733, listed under the general heading 'Account of the Net Charges of the Several Works in Scotland belonging to the York Buildings Company from Christmas 1727 to Christmas 1732', is the 'Account of glass manufactory at Port Seton stands Dr. to Balance £3,329 14 4 1/2'(sterling), listed under the same heading are 'Thomas Fordyce disbursements 1728 £750' and 'ditto to Christmas 1732 £9 3 0', a total debit of £4,088 17 5 sterling.[78]

As usual, most of the extant correspondence addressed to Sir Archibald Grant of Monymusk about the Port Seton glassworks relates to problems. By 1730, he owned three of the twenty shares in the glassworks and a one third part of William Adam's coal mine at Port Seton 'taken with a view to the Glass Works ...'[79] Three more of the shares were, by 1 January 1730, owned by William Burroughs of the Charitable Corporation, and were, together with his share of the stock in hand, valued by him at £600.[80]

The man responsible for the day-to-day running of the glassworks was Patrick (sometimes called Peter) Grant. A letter written by him to Sir Archibald Grant in London, dated Edinburgh, 27 May 1731, shows that the financial affairs of the glassworks were already in dire straits. He enclosed a list of outstanding debts and a summary of his receipts and expenditure, pointing out that 'this is the third week the hands are unpaid excepting about £14 I had of my own by me which have distributed amongst them in the best manner I could ...'[81] He had applied to Thomas Fordyce for instructions, but had been told that no more advances of money would be authorised 'without special directions', and that both Colonel Horsey and Sir Archibald Grant had

written to him, saying that unless the works was financially self-sufficient they 'were easy whether the men stayed any longer or not'. Grant wanted permission to pursue the debtors to the glassworks, and was not prepared to dismiss the workforce without express orders from Sir Archibald. He had consulted William Grant, Sir Archibald's brother, who had told him to keep the hands together until he had heard from Sir Archibald himself. 'Mr. Stephen (John Stephen, merchant in Edinburgh, who was closely involved with the glassworks) has valued on you & Capt. Burroughs for £50 sterling & given me to distribute amongst them'.

Some idea of the size of the workforce for which he was responsible can be obtained through the Tranent parish records, and other contemporary sources, from which the following list of employees has been compiled:

James King glassmaker in Port Seton, subject of a caption of horning 2 February 1730.[82]

Thomas Cook, glass maker at Port Seton, married 8 December 1730, Catherine Thomson, lawful daughter of deceased John Thomson glassmaker at Morisons Haven, witnesses:

Leonard Biggens glassmaker who married Margaret Colt irregularly 9 Jan. 1731,

and **William Bell** described as 'glass maker' when his son was buried 28 Nov 1732.

Samuel Griffin glassworkman at Port Seton, married 19 May 1731 Anne Wilson, lawful daughter to John Wilson.

John Stannion glassmaker at Port Seton, married 28 August 1731 Jannet Thomson,daughter of deceast Patrick Thomson farmer in Seton, witness:

Thomas Bate glassmaker in Port Seton.

John Shepherd, glass workman at Port Seton, married 16 February 1731 Jean Main, witness Francis Bees wife to-

William Bees glassworkman.

David Elder died at the 'glasshouse sink', buried 18 June 1731.

William Parre glassworkman, buried 18 June 1731.

Thomas Shule glassworkman at Port Seton, marriage to Margaret Douglas proclaimed 19 March 1732, 'the marriage was stopt and he dyed'. He was buried 20 July 1732.

John Colt glassworkman - wife buried 17 Jan.1732.

Edward Henderson glassworkman at Portseton, married 7 July 1733 Jannet Smith daughter to:

William Smith potmaker.

Thomas Smith glassworkman at Portseton, married Barbara McCarie 7 July 1733.
William Milne, smith, died 1733.
Trevis, potmaker.

It is obvious from their surnames that many of the men employed at the glasshouse were not local, and it is significant that most of the marriages listed above took place in the Episcopalian church at Canongate in Edinburgh. The dates cluster around 1731 to 1733, coinciding with the period of maximum production at the glassworks. Bearing in mind that only employees whose names and occupations occur in the records are listed, the number is obviously far from complete, and would tend to confirm that several teams of glassmakers were in operation.

Having resolved the immediate problem of paying the workforce, Patrick Grant went on to write about the severe problems they were having with the pots at the glasshouse. He was not certain whether the fault lay in the clay, or with Smith the maker, so he had set another man, Trevis, who had made pots at Newcastle for several years, to make some, to see whether he could do any better. Grant appears, however, to have thought that the problem actually lay with the clay itself, and suggested sending to Felton for clay used by some of the Newcastle glassworks, and which 'has been tryed & approven of by Mr. Balfour [of Leith] when he had his bottlework'. Whatever the cause, failure of the pots was disastrous to any glassworks, as was shown in chapter one.

It seems likely that the local clay used at the glassworks came from Carlaverock, a hamlet on the Winton estate. (See Fig.30). An undated note in the York Buildings Company papers, which appears to be a list of things to be done, includes the line 'James Turnbull, in Carleverook, where the clay is'.[83] The same paper also indicates the source of sand: 'the sand is below Trenent, inquire of John Colnit at the glass house att Morrisons haven who is the tenant there?'[84] In addition to these difficulties, Patrick Grant's letter makes it clear that competition from Newcastle, together with slight local demand, were also crippling their business. He wrote:

> If you doe not order the window glass on hand, at least what was made before Feby last, to be sent to London or some other places where you think it may goe off in some shape or other it may remain I know not how long, for while the Newcastlers continue to send such glass as they now doe it will never sell here. Consumpt is likewise

much wanted for flint glass & want to know if some should be sent to London of such sortes as might probably ansr best there.

He also mentions that ninety-two half chests of window glass, valued at £13, were in the hands of John Thomson.[85] A note on the back of this letter, presumably written by Sir Archibald Grant, says 'Answrd 3rd June 1731 and ordered to dismiss the men from the works &c.'

Despite the apparently terminal nature of the problems and the finality of Sir Archibald's reply, however, the glassworks did not close down; indeed, it survived a tragedy which took place in the middle of June, only a fortnight after his letter. On 21 June 1731 the *Caledonion Mercury* reported: 'We are told that three men fell last week into a coal sink at Port Seton, and perished'.[86] At least two of the men who died, David Elder and William Parr, were employed at the glasshouse, and were buried on 18 June.[87]

As is to be expected with this type of archive, only fragmentary material remains. As with the Fearn papers, there are lists, jottings, and notes scribbled on the back of dated papers which, while providing useful information, are often difficult to interpret, particularly in terms of the chronology of events. Some letters, however, are unequivocal and offer not only a picture of the current state of the works, but an insight into the whole business of trying to run a glassworks in Scotland. A letter to Sir Archibald Grant in London, written from Leith on 5 July 1733 by Patrick Grant is such a one.[88] He had been asked to tell Sir Archibald Grant some basic details about the co-partnership, to which he replied: 'Who are the present partners & what each have paid upon their respective shares I never yet could truely learn', although he hoped to do so soon; the holder of this rather basic information was apparently the ubiquitous Thomas Fordyce, recently returned from London.

Patrick Grant went on to promise a description of the works 'with accott of what sorts of work its adapted for, & what tools or materials ... is upon hand', he could not, however, value them because they were *in situ* when he arrived, and were not valued at that time. The disposal of the existing stocks of poor quality window glass had still not been resolved, but he was more sanguine about the flint glass, which he promised to list and price. Clearly the administration of the glassworks was in a chaotic state, exacerbated by his inability to write up the credit and debit ledger for nearly three months because his arm had been injured by his horse falling on him, although he had

kept up the day book. After explaining that coal cost 8s 10d per wagon, or 4s 5d a ton, he went on:

> There's few or no advantages in my opinion accrues to a house in this countrey by the cheapness of any thing except it be labourers wages, for as there's few or no materialls produced here but kelp, the freights being dear for want of frequent opertunities especially to this port, comes dearer than in England, and as most of the work men are from thence, they are paid the usuall wages given there, & tho the coalls appear cheaper I really believe them as much worse in quality. The maine furnace is the only one presently employed, the one side on flint & the other on botles, but the pots haveing suffered by the fall of the roof, by their frequent breaking I can scarce get as many goods made as will discharge the charge untill new pots be ready, which hope will now be in a short time. The charge of repairing the house & furnace again, play wages, & purchasing clay from Felton (that got here being turned so weak that it would doe no longer) and some few other materialls for flint & botles that were absolutely wanted, has drained me so of money that I know not how to get the men kept alive till payts for goods lately sold become due.

It is clear from Grant's remarks that all the raw materials for flint glass, including presumably sand and ash, had to be imported. Although the kelp for bottles was a more local product, that, too, had to be shipped in from elsewhere in Scotland. The only locally available item seems to have been Tranent sand, which would have been suitable for the coarser glass. If the coal, the availability of which was a major reason for establishing a glassworks at Port Seton in the first place, was of such poor quality, it is easy to understand the despair so patent in Patrick Grant's letter. Obviously even the problems with the clay had not been resolved, some two years after he had complained about it. The roof fall, described in another letter as having taken place the previous winter,[89] is also mentioned on the back of one of the undated lists. It says: 'Adams liable for the ill conduct and unsuitableness of the building, and when wages paid whilst it was not ready - Especially for the insufficiency of it. & all dammages sustaind by the falling of the roof ... but it was notoriously mismanaged from the beginning ...' Adam's 'Accompt of Timber and Tyles for the rooff of the Glasswork' costing £81 14 11 1/2 sterling, which he provided 'in or about February 1733', was still outstanding in 1736.[90] It is, perhaps, not too surprising that even so accomplished a builder as William Adam should fail adequately to construct such a specialist building as a glasshouse cone, (if that is what it was), which was notoriously difficult. Scoville emphasises the problem, citing as one example the collapse of the

furnace of a bottle factory at Bourg-sur-Dordogne twice during the first year of its operation.[91] He also mentions the crucial importance of suitable clay for the crucibles.

Patrick Grant wrote a further letter to Sir Archibald in August 1733, in which he suggested that, despite the considerable losses due to the factors described above, he believed that £600 sterling a year could be made at the glassworks by concentrating on the production of bottles and a small amount of flint glass. However, the best option would be to make only bottles 'there being the greatest demand & quickest return for them'. The profit margin on window glass was higher, but the Scottish market was too small, and production would only be viable if there were an export trade. He complained again about the cash-flow problem, which had prevented the ordering of essential materials, and had hardly enabled him to 'keep the hands in good humour', and ended: 'I heartily wish some concert could be made amongst those concerned, how the work might be carried on, so as the money hitherto lost, might in time be recovered ...' His comments point up the complete lack of co-ordination or any coherent policy, the frustrations of managing the day-to-day business while decisions were made, or rather not made, in London, and the inevitable dilemma of an almost bankrupt business - the only way to recoup past losses being to risk more money. He also drew attention, once again, to the difficulty of extracting payments from the purchasers of the glass. Sir Archibald Grant does not appear to have hurried to reply, since a note on the back, after a short summary of the contents, says 'at present wrote for a full state & plan for future conduct, 22 January 1733/4'.

There is some evidence that, in 1733, he had been trying to promote the glasshouse in London, and had investigated the prices charged there for flint glass. A letter sent to his address in Hanover Square gives a list of prices of glass 'from the maker' (doubtless in sterling).

Small vials being 1 oz. & under at 4s per gross
from upward of 2oz to 7oz @ 6s per gross
to 10oz 8s per gross
1/2 pt round at 18s per gross.

All the above are bracketed together, with a note, 'Disc @ 25 pr lb? The list continues:

all decanter wine glasses & crewetts &c. @ 6s pr [?]
salve sweetmeat glass, gelly &c. @ 9s nett

handle basketts at 18s nt.

A letter in the same hand, dated August 1733, and signed Charles Shane, apologises for a delay in sending 'the inclosed acct.' and goes on 'I have taken frequent opportunity to mention the Glass House with all the advantages I could but have not yet mett with anyone that approve the thing'. A note on the back reads: 'Mr. Shaun with price of glasses'.[92] (A Charles Shan described as 'late citizen and glass-seller of London' was declared bankrupt in May 1733,[93] three months before his letter was written, but his exact relationship to the Port Seton glasshouse is impossible to guess.)[94]

By October 1734, matters had deteriorated still further, the pots were still breaking, and Patrick Grant decided to cancel an order for ashes which he had, with Sir Archibald's agreement, ordered from London. He was informed, however, that they had already been shipped, so he struggled on until they arrived. When the ship docked he discovered that only one kind of ash was on board, although another sort was also needed, 'the man who had agreed to furnish them haveing gone back of his bargain - through the influence of the glasshouses at London, who threatened never to take any more from him, if he served us ...'[95] It is interesting that, despite all the problems, the Port Seton glassworks should have been perceived as a threat to the London glasshouses, and is, perhaps, indicative of some considerable success in the short term.

This appears to have been the last straw. Grant not only lacked essential raw materials and was very short of money, but he was also having great difficulty in obtaining coal, because William Adam was refusing to supply any. This is hardly surprising since Adam was owed for coal supplied in 1732 and 1733.[96] Grant was 'upon the 12th currt. oblidged to stop the work', having failed in his attempts to extract money due from customers or to obtain credit, and had been forced to let the hands disperse.[97] So, on the face of it, the Port Seton glassworks ground to an ignominious halt on 12 October 1734, after a documented existence of only six years.

Needless to say, the financial mess remained to be sorted out, and several of the jottings and notes in Sir Archibald Grant of Monymusk's papers related to his debts and money owed to him, include mention of the glassworks. In what appears to be instructions to his solicitor, written in May 1735, is a section headed 'As to the Glass work',[98] which talks of raising a process against all the partners, either together or

individually, for £450, in addition to which he was claiming back money he had personally advanced for the works. William Adam is said to have obtained a decreet against the York Buildings Company for £800 'alledged due to him', against which he was withholding his rent.[99] Adam was also apparently suing Patrick Grant for a smaller sum, but Sir Archibald considered that Adam actually owed the glassworks money, not only because he was responsible for the collapse of the roof and consequent damage to the materials and lost wages, but also because he had received quantites of goods from the glassworks, for which he had not paid, an allegation reiterated in a letter of 26 March 1750, some fifteen years later.[100] An account from William Elliot, writer, of 5 July 1735 confirms that Sir Archibald did take action against the proprietors of the glassworks.[101]

Despite the evidence which appears to confirm the closure of the glassworks, there are some indications that it may have actually continued in operation until at least 1742, probably making bottles. On one of the undated, unsigned lists, apparently in Sir Archibald Grant's handwriting, appears the following:

> The workmen at Portseton Glass house offer as follows. To deliver to Mr. Grant into the warehouse round bottles at 12sh 6d pr gross, and long-necks at 14sh 6d pr gross, all good & sufficient merchantable wares, in payment of all materialls, charges and incidents - furnisht by the proprietors according to the following particulars thereof, but if upon an acct, keept, it shall appear that the said prices cannot be allowed by the proprietors, then the round bottles are to be deliverd as above at 12sh pr gross & the long necks at 14sh.
>
> The soap & wood ashes, at the prices and charges they cost
> The kelp at 45sh pr tun
> the collet at the price and charges it costs
> the coals to be paid in bottles as above the price they cost
> the clay and potts upon hand to be returned in the same quantities or their values, as deliverd.
> the houses to be kept in repair, and the charges deducted from the price of the bottles.
> all other utensills belonging to the proprietors to be returned as deliverd.
> 24 sh pr week to be deducted out of the price as above towards Mr.Grants salery, besides his supply with coals.
> This agreement to subsist for six months from the date of the articles - and accts to be made and cleard monthly.[102]

Could this indicate an attempt by the workmen, under the leadership of Patrick Grant, to take over the running of the works, avoiding the need for an injection of cash by

paying for the materials *in situ* with the bottles they made? Certainly it suggests a radical change of system, since the wages of all but Patrick Grant would, presumably, have to come from the sale of the bottles directly, rather than being paid whether or not they produced anything. It also spells the end of flint and window glass manufacture, in line with Patrick Grant's wish to concentrate on bottles, while the six-month trial period also suggests a change of strategy, and the alternative prices a certain flexibility.

It is difficult to be certain when the glassworks closed permanently, since the extant material appears somewhat contradictory. It was certainly not functioning in April 1735, when William Adam presented a petition to the Court of Admiralty. He had raised an action against the York Buildings Company and Patrick Grant, 'sometimes manager of the glass work at Cockenzie' and had arrested utensils and materials belonging to the glassworks, which were aboard a boat 'now lying in the harbour of Leith'. He had similarly arrested other glasswork utensils which were in the hands of John Stephen, also at Leith. Adam asked for a warrant permitting the goods to be unloaded and put into the custody of John Stephen. This was granted, as was his request for an inventory to be compiled.[103]

However, another document of 3 September 1735, implies that the glassworks was, in fact, still a desirable asset at that point. On 30 July 1735, Sir Archibald Grant of Monymusk obtained a decreet in the Court of Session, requiring the York Buildings Company to pay him £2,888 2 4 sterling, plus interest and expenses of £500, for a long list of items supplied to the Strontian lead mines on behalf of the company.[104] They refused to pay, so on 3 September 1735 Grant obtained a decreet of adjudication against them. He claimed property equivalent to the money owed him, which included: 'Item, the said Company's shareright and interest in the Glassworks at Cockenzie or Portseton with the Harbour and ?new house'. [105]

Since there are other references to a glasshouse at Port Seton later than one would expect if it had ceased to function in 1734, it seems quite possible that it was, in fact, restarted. For example, on 7 January 1741, the Tranent parish accounts record receipt of £6 3 4 (Scots) for hire of the best mort cloth and a peal of the great bell for 'Mrs. Grahame at the Glasshouse'.[106] A decreet of the Court of Session made at Edinburgh on 31 January 1741, also refers to the glassworks. In the case of the annuitants of the York Buildings Company against George Buchan, is a list of the money which Buchan was permitted to withhold from his rent for various expenses, including: 'Item

for the seat of the glass works yeards & office houses thereof at £1 13 4 [sterling] yearly'.[107]

More important is a lease recorded in the register of deeds for 1747, granted by the York Buildings Company to George Buchan and John Buchan, his son, dated 21 July 1742, of Cockenzie and Port Seton, Longniddrie, etc., for 29 years.[108] Part of the agreement reads: 'as also reserving power and liberty to the sd Govrs. and company to design and take of from the lands in the barronie of Seton lying nearest to Cockenzie and Harbour of Portseton for the use of the glass works or any other use they think all twenty acres of ground for which the lessee shall have deduction yearly ...' It seems unlikely that the phrase 'for use of the glass works' would refer to anything but an operational glasshouse - which must, therefore, extend the period of operation to at least mid-1742.

A further reference to the above lease occurs in a deposition by George Buchan made in August 1753.[109] After a lengthy statement about rent, he says that the York Buildings Company could sink pits or make wagonways 'upon any part of the said lands as also to take off ground near Cockenzie or Portseton for the use of the glassworks for which they are to allow the damages and rent yearly to the deponent'. He was obviously refering to the 1741 lease, and it seems very unlikely that the glassworks was still in existence at that time, since a letter from Thomas Fordyce to Mr. Innes, deputy cashier to the Royal Bank in Edinburgh, shows that by 1750, Patrick Grant was dead, as was William Adam, and that Thomas Fordyce was, once more, juggling his finances.[110]

There are twelve volumes of extracted legal processes relating to the York Buildings Company in West Register House, which are difficult to access, since they are only very minimally indexed.[111] In a long list of items held by the Court of Session, mainly relating to the lead mines at Strontian, is a letter from Mr. [Francis] Grant (see below) to a Mr. Pembroke, dated 4 January 1743. It is described as 'about Port Seaton and informeing he would be obliged to surrender his lease of the coal and saltworks unless the same was repaired. Advises the company to erect a glass house'.[112] Unfortunately, despite the best efforts of the archivists, the warrants for the processes cannot be found. The extract does, however, indicate that no glassworks was operating at the beginning of 1743.

Thomas Fordyce's letter, written from Ayton on 26 March 1750, asked Mr. Innes to meet a bill drawn on him, which was part of £300 which he, Lord Drummore, William Adam, Alexander Garden of Troup, and others un-named, had borrowed from Provost Coutts, for the 'deceast Patrick Grant for support of the Glassworks'. He went on: 'Peter Grant was to pay the money out of the produce of the works, but when he dyed the whole was found to be due, tho he still said he had put more glass in Mr. Adams hands than would pay the whole, for which there is a process depending.' The others had repaid their parts of the loan to Mr. Coutts, but Thomas Fordyce had not done so, in the hope that the money would be recovered from William Adam's heirs after his death in 1748. It seems somewhat unlikely, although not impossible, that his debt dated back to 1734.

On balance it seems possible that a much reduced workforce, producing only bottles, operated at Port Seton until the 1740s, but further evidence is required to regard the case as proven.

William Adam, who had refused to supply coal to the glassworks in 1734, relinquished his lease of the coal and salt works of Cockenzie in 1736. In a letter to Lord Milton he mentioned the forthcoming roup of the lease and the losses he had sustained at the works, commenting somewhat acerbically that his 'old friend Mr. [George] Buchan' seemed determined to take it over as he 'has a notion that a great deal of money is to be made by it ... I am fully satisfyd he will burn his fingers, but then, I shall lose the opportunity of getting any part of my loss made up'.[113] In fact, the lease of the coal works was taken over in 1737 by Francis Grant, brother of Sir Archibald Grant of Monymusk and of William Grant, who bought the Prestongrange estate in 1745.[114]

The estate of Winton was finally offered for sale by the York Buildings Company in 1778, after many years of neglect, frankly admitted in the advertisement. After describing the improvable agricultural land, the rents of which had not been increased for sixty years, it continued: 'The coal and salt works yielded, at the time of the Company's purchase in 1719, above 1000l. per annum; but having been neglected, in the general confusion of the Company's affairs, are now let at 300l. per annum...'[115]

The history of the Port Seton glassworks seems to be a classic example of an ambitious enterprise embarked upon, with initial enthusiasm, by investors from a variety of backgrounds, many of them appropriately associated with the consumption

of glass, but which foundered in a short time, leaving debt and disillusion in its wake. Problems with the quality and supply of raw materials; the lack of local expertise; poor management, especially when the major decision-maker was living in London; difficulty in obtaining payments for goods supplied, leading to the inevitable starvation of cash; and the consequent impossibility of maintaining a product of sufficiently high quality to compete with Newcastle, all contributed to failure. It is just possible that the glassworks did actually function on a small scale, producing only bottles for the local market, for a considerably greater period than can be proved at present, but there is no doubt that the attempt to manufacture table glass and mirrors for the prestigious sector of the market did not, sadly, survive for long.

[1] A.J.G. Cummings and T.M. Devine (eds.), *Industry, Business and Society in Scotland Since 1700* (Edinburgh, 1994).

[2] *A Selection of Scottish Forfeited Estates Papers 1715; 1745*, ed. A.H. Millar (SHS, 1909) p. xxxiii.

[3] *ibid*, p. xxxiv.

[4] Cummings, *YBC*, 308.

[5] NAS, E.607/1/25. Forfeited Estates 1715, Register of Dispositions.

[6] *Forfeited Estate Papers*, p. xvi.

[7] YBC stock was quoted in the *Edinburgh Evening Courant* in August 1720 at 260, by the end of November it had fallen to 14.

[8] G. Seton, *A History of the Family of Seton* (Edinburgh, 1896), 224.

[9] *ibid*, 224.

[10] NAS, E.661/103/51.

[11] Seton, *Family of Seton*, 240.

[12] T.C. Smout, *Scottish Trade on the Eve of the Union, 1660-1707* (Edinburgh, 1963), 74.

[13] *Scots Peerage*, viii, 603.

[14] Seton, *Family of Seton*, 249-75.

[15] *ibid*, 251, quoting Calder's dedication to *Genuine Epistles of St. Ignatius*.

[16] *Scots Peerage*, viii, 590.

[17] J. Hatcher, *The History of the British Coal Industry Volume I: Before 1700*, (Oxford, 1993), 109.

[18] EUL, *Mapp of the Parioch of Tranent with the Port of Seaton*, John Adair, 1688.

[19] NAS, E.607/1/25.

[20] *Forfeited Estates*, pp. xvi - xxxii.

[21] K.Brown, 'The First Railway in Scotland', *Railway Magazine*, no. 487, (1938), 1-4.

[22] Cummings, *YBC*, 308.

[23] *ibid*, 310.

[24] *ibid*, 312.

[25] This date appears odd, but it is correct.

[26] NAS, GD345/854/12. Cummings suggests that the YBC bought coal from their lessees to sell in London, (Cummings, *YBC*, 313.)

[27] Cummings, *YBC*, 337.

[28] NAS, GD345/854/8. List of rentals of the YBC estates in Scotland.

[29] NAS, E661/77. 'Account of salt in the girnells of Cockenzie made before 2 July 1716 and how and at what the same was sold '.

[30] WRH, CS96/4520. Factor's account book for William Morrison of Prestongrange.

[31] NAS, GD1/170/2.

[32] NAS, GD1/170/1.

[33] NAS, GD1/170/1.

[34] Cummings, *YBC*, 326.

[35] NAS, GD1/170/1. John Cockburn 26 October 1721.

[36] PRO, T/1/258.

[37] NAS, GD1/170/1.

[38] NAS, GD1/170/1. Summary of letters written by Robert Hackett, presumably, in this case, to Fordyce and Campbell

[39] NAS, GD1/170/1. January 1720, summary of Hackett's letters. This probably referred to the Morison's Haven works, in view of the advertised English workmen there. (See chapter 8).

[40] NAS, GD1/170/1. Summary of Hackett's letters. Seton House was, in fact a very large building, as a drawing by John Clerk of Eldin shows, (RCAHMS).

[41] NAS, GD1/170/1. Summary of Hackett's letters.

[42] NAS, GD1/170/1. Robert Wolsted and Richard West, London 21 Sept, 1721 to John Hackney, Post Office, Edinburgh.

[43] WRH, CS96/4520. Factor's account book for William Morrison of Prestongrange.

[44] NAS, GD1/170/1. Letter to YBC from Fordyce and Cambell, 16 December 1721.

[45] WRH, CS22/717, no page number, but listed as Branch 2, Bundle 3, no 57 in the first of 11 volumes dated 10 February 1795, dealing with the ranking of creditors of the York Buildings Company. There may well be more material about the glassworks in the many letters, accounts, draft agreements etc., listed in this volume, but the warrants cannot be traced at present.

[46] WRH, RHP.3387.

[47] Cummings, *YBC*, 328.

[48] WRH, CS133/452. Decreet the annuitants of the YBC against William Adam, 25 February 1737.

[49] *ibid.*

[50] Cummings, *YBC*, 320.

[51] NAS, GD18/1767/3/57. Clerk of Penicuik muniments.

[52] Gifford, *Adam*, 68.

[53] *ibid*, 73.

[54] Kirkcaldy Public Library 'Linktown Potteries, Documents 1714-1847, 2,3,4.

[55] Gifford, *Adam*, 109.

[56] *ibid*, 110.

[57] NLS, Ms.15551 f.24. 'Agreement between the Marquis of Tweedall and William Adam'; f.66, Account for parcel of wainscotting and 15,000 bricks sent to Port Seton.

[58] Cummings, *YBC*, 328; Murray, *The York Buildings Company*, 65.

[59] WRH, CS133/452, The documents are not individually numbered.

[60] Cummings, *YBC*, 330.

[61] NAS, GD345/765/7. Patt. Grant, Port Seton to Sir Archibald Grant in London, 9 August 1733.

[62] WRH, CS133/452.

[63] *Journal of the House of Commons*, xxii, 190.

[64] NAS, GD345/1515. *The Daily Journal* 15 August 1732, 'A Scheme for the Payment of the Debts of the York Buildings Company'.

[65] Cummings, *Industry and Investment*, 33.

[66] R. Sedgwick, *History of Parliament, The Commons 1715-1745*, ii (London, 1970), 77-78.

[67] WRH, CS133/452.

[68] NAS, GD345/765/1.

[69] James Brydges, Duke of Chandos, first governor of the YBC, was a wealthy, but often unsuccessful, entrepreneur, whose enthusiasm frequently got the better of his judgement. Among his many ventures was the establishment in 1725 of a glassworks in Bridgwater, Somerset, making window and plate glass, and bottles. Costs were far higher than expected and the quality of the products was poor. It closed in 1733. (C.H. Collins Baker and M. I. Baker, *James Brydges First Duke of Chandos* (Oxford, 1949), 232-34).

[70] NAS, RH9/1/212. Journals of William Dickson wright in Cockenzie.

[71] NAS, GD345/765/2. The relatives of Sir Archibald Grant were: William Grant (who bought the Prestongrange estate from William Morison's heirs in 1745), brother;

Alexander Garden of Troup, advocate, brother-in-law; George Buchan of Kelloe, brother-in-law; Thomas Fordyce, uncle. Lord Drummore owned the Westpans property adjacent to the Prestongrange estate, previously the property of John Jossie.

[72] NAS, GD135/2057/34. Assignation of the Right Honble the Earle of Stair to the Right Honble the Countess Dowager of Stair of his interest in the glass manufactury at Port Seton, 1729.

[73] H. Marwick, *Merchant Lairds of Long Ago* (Kirkwall, 1939), 142.

[74] NAS, GD135/2217/22.

[75] *The Eccho* or *Edinburgh Weekly Journal*, 31 December 1729.

[76] *Edinburgh Evening Courant*, 9-10 February 1730.

[77] Murray, *York Buildings Company*, 65.

[78] *Journal of the House of Commons*, Vol. 22, 190.

[79]London University Library Special Collection, GL.1732 (7014). A true and exact particular and inventory of all and singular the lands...goods...and personal estate...which I, Sir Archibald Grant, was possessed of...upon the first day of January 1730.

[80]As above, GL.1732, Inventory of William Burroughs.

[81] NAS, GD345/765/3.

[82] NAS, D1/2/724.

[83] James Turnbull was a farmer in Carlaverock. A memorandum in the Fearn papers about the Morison's Haven glassworks includes: 'To Mr. Trumble for Clay £1 13 4'. (NAS, GD1/576/15, n.d.)

[84] NAS, GD1/170/1.

[85] Thomson is shown as owner of two shares on a later, but undated, list of shareholders. (GD345/876).

[86] Fleming provides a more colourful 'quotation' from what appears to be a non-existant newspaper, the *Daily Post*, describing this incident. His version reads: 'Edinburgh, June 22, 1731. We hear from Cockney that some of the Houses belonging to the Glasswork there suddenly sank down, and the water rushing up, several of the servants perished and others narrowly escaped. The ground below is all wrought coal.' (Fleming, *Scottish Glass*, 106).

[87] Tranent OPR. See list above.

[88] NAS, GD345/765/8.

[89] NAS, GD345/765/7.

[90] WRH, CS133/452.

[91] W.C. Scoville, *Capitalism and French Glassmaking, 1640-1789* (Berkeley, 1950), 38.

[92] NAS, GD345/765/2, /3.

[93] *London Gazette,* 28 April to1 May 1733.

[94] Elsewhere in the Grant of Monymusk papers is a printed, undated, advertisement for the raffle of china at Charles Shans, the Prince Eugene's Head, Cheapside, London, (GD345/1493/43) but that may not have been his permanent address. Searches in the PRO and Guildhall library have failed to unearth any more details.

[95] NAS, GD345/765/9. Patrick Grant at Port Seton to Sir Archibald Grant of Monymusk Bart. to the care of Thomas Farquherson merchant in Aberdeen, 26 October 1734.

[96] WRH, CS133/452. A breakdown of the coal supplied shows that, between 14 December 1732 and 24 November 1733, he provided 384 wagons of great coal, 10 wagons of small coal, and 40 'loads' of coal to the glassworks.

[97] *ibid.*

[98] NAS, GD345/876/19. Memorandum for William Elliot from Sir Archibald Grant.

[99] This is possibly the case heard in 1735-7, the papers of which are in CS133/452.

[100] NAS, GD113/3/317/18. Innes of Stow papers, Thomas Fordyce at Ayton to Mr. Innes, 26 March 1750.

[101] NAS, GD345/876/16.

[102] NAS, GD345/765/9. The currency is not defined, but was presumably sterling.

[103] WRH, AC10/215, 14 April 1745. Admiralty Court records. Only the petition has come to light.

[104] WRH, CS137/273.

[105] WRH, CS137/274.

[106] NAS, CH2/357/10.

[107] WRH, CS18/234, Nov. 7 1740-Jan 31 1741.

[108] NAS, RD3/207/1.

[109] NAS, GD345/876/4. Edinburgh 11 August 1753.

[110] NAS, GD113/3/317/18.

[111] WRH, CS30/13-24.

[112] WRH, CS30/14 p.1056.

[113] NLS, Ms.16564. Saltoun papers, William Adam to Lord Milton, 11 August 1736.

[114] Cummings, *YBC,* 340.

[115] *The Edinburgh Advertiser,* 14 August 1778.

CHAPTER 11

THE GLASGOW BOTTLEWORKS

James Montgomery's petition to parliament in 1700, requesting a patent to set up a glassworks in Glasgow[1] heralded the foundation of one of the more stable and successful of the Scottish glasshouses, although very little has been written about it. The scene was set by James Denholm in his history of the city, published in 1804, when he stated categorically that: 'The first glasshouse was erected about the year 1730'.[2] Pagan similarly placed the start of the bottle works in 1730,[3] while Fleming discussed Montgomery's petitions and the licences granted to him up to 1703, but continued: 'We hear nothing further till 1730, when "The Bottle-house Company" was established ... at the north-east corner of Jamaica Bridge'.[4] W.R. Scott followed suit, suggesting that the bottle house 'built in 1699 must soon have been used for some other purpose than that for which it had been originally intended.'[5] However, a recent history of Glasgow, edited by Devine and Jackson, gives the more accurate date of 1700.[6] Certainly, James Montgomery and his partners, having campaigned hard for their patent, *did* build their glassworks before 1702, and, remarkably, the same company was still operating, on the same site, forty years later.[7]

On 12 November 1700, 'James Montgomerie of Pearston, younger',[8] presented to the Scottish parliament a a well-argued and forceful case, setting out the reasons why he should be given the privileges of a glass manufactory, despite William Morison of Prestongrange's monopoly, which had been granted by the privy council on 27 April 1697, and confirmed by Act of parliament on 1 September 1698.[9] Montgomery's reasons for stating that Morison did not deserve to retain his monopoly have already been described,[10] but they formed only one prong of his attack.

It began by pointing out how badly served Glasgow and the west of Scotland were with supplies of glass, despite the glassworks at Leith and 'other parts', because it 'cannot be transported to the West Countrie, but with a vast Charge and great hazard, being at a great distance, and necessarly to be carried over Land'; an irrefutable argument in a time of atrocious roads, especially in the case of a fragile and bulky cargo. Montgomery's petition was actually to make glass and soap, the logic of which was explained in his next statement. He pointed out that there was an ample potential supply of ashes to be obtained in the west of Scotland and the Highlands, from ferns, 'a most useful Material for that Work',[11] and also from wood

> which serve for little or no other use, and may be Manufactured first into good white Soap, which would be of great use to the Kingdom, and which is no where made in Scotland, nor imported, but with vaste charge, and the remains of these Wood ashes, after the Soap is made, is a most excellent matterial for making of Glass.

He was, of course, right about usefulness of soaper's ashes in bottle production, but there were already Scottish soap-makers, and the manufacture of soap was actually one of the earliest to be established.[12] In fact a co-partnership to make soap had been set up in Glasgow in 1675.[13] This enterprise had failed, however, and Gordon Jackson writes that their losses reached £51,810 Scots by 1680.[14] W.R. Scott describes another Glasgow soapworks in some detail and also, perhaps, provides the clue to the difference between the soap being made by the existing manufactory, and that projected by Montgomery: while Montgomery talks of 'good white Soap', that being sold in Glasgow in 1715 was 'good black or speckled soaps'.[15] Since the Glasgow soaperie was actually in operation in 1700, Montgomery was clearly intending to produce a more refined product.

Montgomery continued by saying that he and his partners

> have these ten Months bygone been with great Application and vast Charges seeking out the best Workmen who were to be got in England, and providing all Necessars and Materials for the samen: And have also erected a very pretty Edifice for serving both the Soap and Glass-Work.

He therefore appealed that they should be granted the privileges of a manufactory, on the same terms as the Leith and Morison's Haven glassworks.

Not surprisingly, his application was opposed by William Morison of Prestongrange - leading Montgomery to argue that Morison had not produced what he had promised and that what he did produce was of poor quality. Montgomery pointed out that he had, in fact, built his glassworks within the two years stipulated in Morison's Act; he had only delayed going into production because he did not want to lay out more capital until he had obtained the privileges of a manufactory. His petition had been further and unavoidably delayed by parliamentary adjournments. He also, with some logic, argued that, since David Lord Elcho had been granted the same rights as Morison but 'hath given over his design', he could replace him, without extra hazard to Morison.

That Montgomery's petition was sympathetically received is clearly shown in draft responses of the same date among the parliamentary papers. The first draft takes up the point about the problems of supplying the west of Scotland with soap and glass from the east.[16] The report of the [trade?] subcommittee begins: 'It is the opinion of the said committie that Mr. Montgomerie shall have the benefite of ane manufactorie for makeing of whyte soap and all kyndes of glasses from which he is not secluded by Prestoungrange act'. They deferred a decision however on whether he could make window glass.[17] The privy council finally granted Montgomery and his partners the right to make glass and soap, with the privileges of a manufactory, on 18 February 1701.[18]

Like other applicants for such privileges, James Montgomery appears to have been somewhat economical with the truth, at least so far as his commitments were concerned. It is hard to equate his claim, in November 1700, that he had been recruiting and equipping a skilled workforce for the previous ten months, with an entry of 29 June 1700 in the records of the burgh council, stating that the council had received an application from him for a feu of ground, in order to set up a glass work 'for makeing botles, window glasses and others'.[19] A committee was duly appointed to visit the site, and to report back to the council.

The plot of land chosen by Montgomery and his partners was on waste ground 'lyeing betwixt the foot of the Old Green and Broomilaw',[20] a site which, with some later additions of land, continued to accommodate a glassworks for some 150 years. The original area measured 200 feet from west to east, 80 feet deep at the east side, and 40 feet on the west, bounded by the 'high way betwixt the Watter port and the Broomielaw on the south, the towns waste ground on the west and north, the forsaid burn at the end of the Old Green on the east parts'.[21] (Fig.32). The site was next to a coal pit[22]and near to the quay at Broomielaw, which had been built in 1663.[23] Although the Clyde at that point was restricted to ships of shallow draft, the proximity of water transport for the sand, ashes and clay needed in bottle production, combined with ready access to the growing Glasgow market, clearly made the site an ideal one. Montgomery asked for a feu of three times nineteen years. No formal agreement was made at that time, however, although the committee measured out the plot, and agreed that he could use it.

> Upon the faith of the above acts of council the saids James Montgomerie, William Smith and Thomas Clark took possession of the ground and built and erected thereupon a glasshouse, with houses and office houses, ... and carried on a going work therein and making of bottles.[24]

The partners certainly did act on faith - the rights of the partnership to that plot of land were not actually legalised until 1742, when the council finally disponed it to them, since they had 'been in the possession thereof ... for these fourty years'.[25]

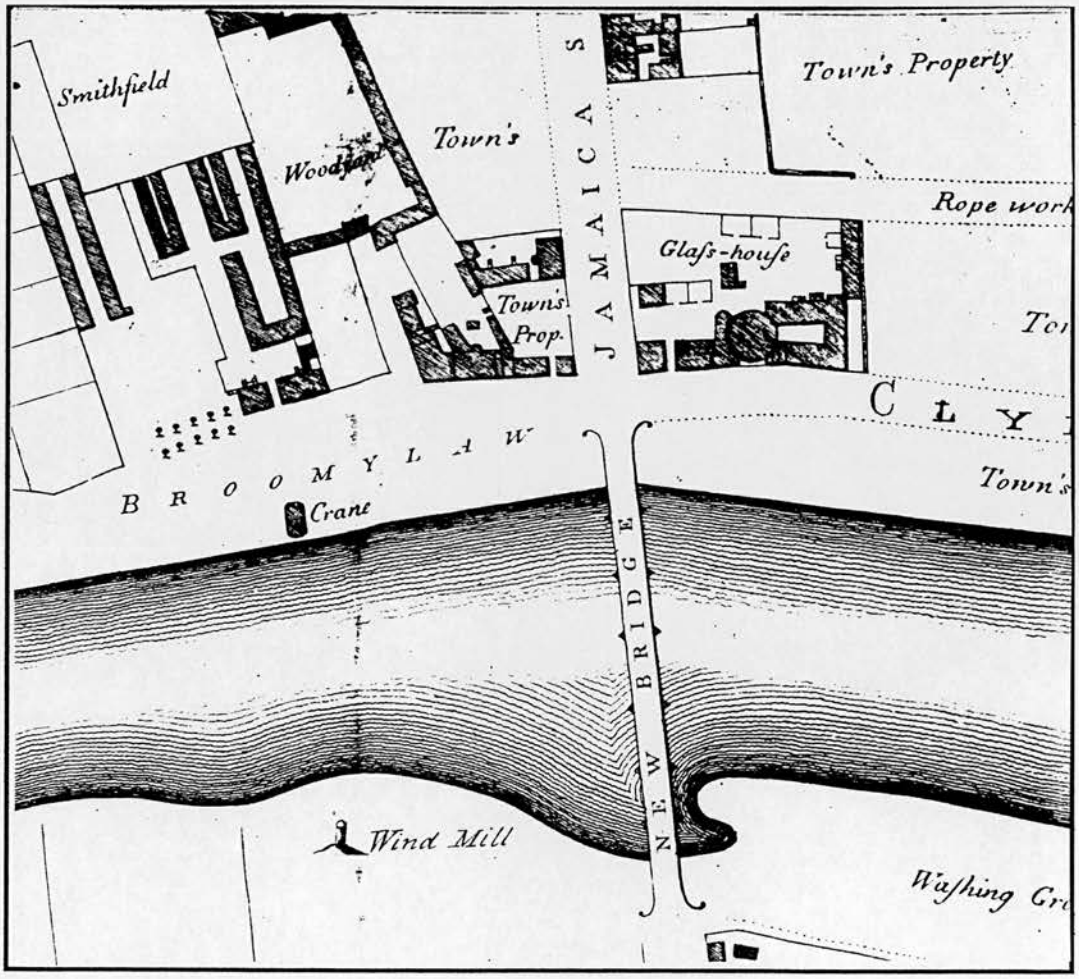


Fig.32. Site of the Glasgow glasshouse, 1778. (Detail from a plan of the city of Glasgow, Gorbells and Caltoun, John McArthur. Courtesy NLS.)

James Montgomery, like so many of his contemporaries, had other business interests, and not only in the west of Scotland. He was a co-partner in the South Sugar House in Glasgow, which had been granted the same privileges as the two existing sugar houses in 1696[26] and, like James Balfour of the Leith glassworks, he was a

shareholder in the Gun Powder Company, established at Canonmills on the Water of Leith, again in 1696.[27] He also owned ten £3 sterling shares in the Scots White Paper Manufacture, established in 1694.[28] Montgomery owned four-ninths of the glasswork at Broomielaw, William Smith had three ninths, and Thomas Clark the remaining two-ninths.[29] All three men were described as merchants in Glasgow. There are two identical entries in the rolls of Glasgow burgesses relating to a James Montgomery: on 25 September 1690 and 30 June 1697, both simply describing him as 'merchant, guild brother master'.[30] He was elected a bailie in 1702.[31]

The Glasgow company lost no time in obtaining aristocratic patronage. In April 1702, the Marquis of Montrose bought twelve dozen chopin bottles from the glassworks at three shillings a dozen, with a further twenty-four dozen later in the year. Partner William Smith signed the receipt.[32] More significant is an account for December 1702, when the glass manufactory supplied: '2 Gross of Duble marked Bottles Stamped with a marques Croune at 3sh 6 pense Ster pr: doz:' for £50 08 00 sterling, plus a further three and a half dozen, and another eight and a half dozen 'plain Duble Ditto: at 3sh.'.[33] This time the receipt was signed by Daniell Montgomerie, 'manager to sd Glass factorie'. The account provides more evidence that the Scottish glassworks were producing sealed bottles to order, like their English counterparts.

It has been shown elsewhere[34] when discussing the glassworks set up by William Morison of Prestongrage, that some of the workforce there had come from Glasgow. Among the papers of advocate David Fearn is a memorial for Andrew Hutchinson, master of the glass manufactory at Morison's Haven, 'anent the dammadges sustained by him related to the glassworks of Glasgow and Morison's Haven.'[35] The Fearn papers claim that:

> Mr. Hutchinson haveing gone to Glasgow upon a call from thence to manadge that work when his presence was not necessary at Morison's Haven, the undertakers sent one of their number to Glasgow (where he had men at work to save Charges at Morison's Haven, their being no stocks for their working there) to disturb Mr. Hutchinson and his men from a settled business and forced him and his men to come to Morisons' haven where there was no work for them, to his great loss and scandal at Glasgow by forceing him from thence...

Hutchinson himself claimed that, in December 1709, 'his workmen were all imployed at Glasgow which worke he was master of', while elsewhere in the document he also claimed to be a co-partner in the glassworks there. He went on to name the team of glassmakers as Michael Stringer, Rob Colney, James Love, James Colney, Isaac Colnoy and Rob Spence, all of whom had been 'forced ... away against the will of the owners of the Glasgow glasswork'. It must be assumed that the loss of six glassworkers was also to the considerable detriment of the Glasgow glassworks, although if they were taken there in the first place by Hutchinson, presumably they were additional to the regular workforce. In another paper in the same archive, Hutchinson described how, when faced with paying 'dead wages' to two teams of men, he had taken ' a jorney to Glassgow to undertake [?] work to imploy one set of my men which I did agree for to be pd 6d for 22 bottels which is a glass makers dozen and a quarter partner beside of the work.'[36]

There is a reference to the glass workmen operating in both Glasgow and Leith in Denholm's *History* of 1804, copied in 1938 by Fleming. Having said that it started about 1730, Denholm wrote about the glasshouse in Glasgow:

> It began upon a small scale, and continued to work for several years for only four months per annum, yet this was then sufficient to supply the demand. A glasshouse was thereafter erected at Leith, and to this place did the Glasgow workmen resort when unemployed at home.[37]

Denholm's comment about four month's supply of bottles being sufficient for the west coast market rings true, and a shared team of glass-makers would make sense, but no evidence has come to light which supports his assertion. Since his dates are, in any case, incorrect, he may have been referring to the movement of workmen between Morison's Haven and Glasgow, mentioned above.

In 1712, the burgh council appointed a committee to estimate the rent of the sites on which a number of manufactories were built, and to check that they were being used entirely for the work intended, and not let to tenants. The industries to be assessed were: 'the Easter, Wester and South suggaries, roapary, soapary and glassary'.[38] Some improvements to the public amenities in the vicinity of the glasshouse were undertaken by the council in the ensuing years. In 1735, for example, they agreed to enlarge and widen the bridge 'at the glasserie', and to renew and repair the timbers of Broomielaw quay.[39] The following year, the magistrates authorised the dean of guild

'to cause make a gravel walk from the towns Hospitall to the glasshouse at the Broomielaw.'[40]

James Montgomery died on 17 June 1733,[41] his share in the glassworks being inherited by his eldest son Patrick, also a merchant in Glasgow, who had been admitted burgess and guild brother in Glasgow, by right of his father, on 26 July 1729. By 1742, William Smith had also died, and his three-ninths share in the business had passed to his sons-in-law, John McGilchrist and Thomas Clark, who also retained his own two-ninths.[42] It was to these three men that the burgh of Glasgow disponed, on 14 May 1742, the formal rights to the land occupied by the glassworks for the previous forty years.

The legalisation of their rights to the Broomielaw site were a preliminary to the sale of the glassworks and the transfer of those rights, just a month later, to another group of Glasgow merchants: Richard Oswald (1687-1766) and Alexander Oswald (d.1768), George Murdoch (1715-1795), John Rowan, John Park, and Thomas Sommers 'master bottle maker' there.[43] The disposition, dated 22 June 1742 (registered 12 June 1744) set the price of the business at £180 sterling, a remarkably small sum.[44] It is possible that the very low price fetched by James Montgomery's glasshouse reflected its small size, and probably the age of the buildings; certainly the new owners had plans for expansion and rebuilding. The legal document is not very clear about the share disposition but, since it specifies that a sixth went to George Murdoch, and one-twelfth each to John Rowan, John Park and Thomas Sommers, brothers Richard and Alexander Oswald must have bought a seven-twelfth share equally between them. The disposition included the right to make 'glass of all kinds' but not to manufacture soap, which was reserved by the vendors.

Even before they legally owned the glassworks, in fact on the same day that the council disponed the land to the previous owners, 14 May 1742, Richard Oswald and George Murdoch petitioned the burgh council for a further piece of ground, to the west of the existing site, in order to expand. A committee was appointed to examine their request and reported on 3 June 1742, recommending that they should be granted the extra land, with the exception of thirty feet 'next to the coallrie' which was to be retained by the town 'for a highway from the Broomielaw' - the future Jamaica Street.[45] The 'ground duty' was set at one merk a year. The land was granted to the new company on 25 August 1742 and a new glasshouse was built on it, at a cost of £1,425 6 0.[46] The ground was legally disponed to the company, after some

rationalisation of the precise area, on 12 June 1744.[47] The glassworks site then measured 267 feet from north to south, 92 feet wide at the east end, and 87 feet at the west end.

Meanwhile, the partnership had been joined by William Rainie (Raining), merchant in Glasgow.[48] The share allocation in 1744 was:

Richard and Alexander Oswald,	
equally between them	2 twelfths
George Murdoch	1 twelfth
John Rowan	2 twelfths
John Parks	3 twelfths
Thomas Sommers	2 twelfths
William Rainie	2 twelfths

Richard and Alexander Oswald were sons of the Rev. James Oswald of Dunnett.[49] Alexander was admitted burgess and guild brother of Glasgow in 1720, Richard in 1724, both *gratis*.[50] Richard was a highly successful merchant, involved in trade with the West Indies and Madeira, the importation of tobacco, a sugar manufacture and ropeworks. He built Oswald's land in Glasgow, and then bought the estate of Scotstoun.[51] George Murdoch was similarly successful, eventually serving four terms as provost of Glasgow. His business interests included the Dalnotter Iron Company and the ropeworks, as well as tobacco importation, and he too bought an estate - Frisky Hall, in Dunbartonshire.[52] Two years after becoming a partner in the Glasgow bottleworks, Thomas Summers, 'master of the Glassary', bought two £150 sterling shares in the new glassworks company at Leith, followed, in 1747, by his acquisition of a 199 year tack of land there, investments which also imply some considerable financial success. He had, in 1745, been admitted burgess and guild brother in Glasgow *gratis*, at the request of George Murdoch, bailie.[53]

A unique contemporary account of a visit to the glassworks is extant in the Montrose papers. In a letter to Mungo Graham of Gorthy, Andrew Gardener, a merchant in Glasgow, wrote, on 22 May 1745:

> Last night betwixt 7 and 8 o'clock I called at the Glass house and lookt on their botles, they have a sort at 16sh pr gross another at 18sh pr gross, the first sort they call ale botles and the next sort they call wine botles, I see litle difference or not betwixt them. The wine botles

> they are very litle longer in the neck than the ale botles they are very sharp chopins, it will take 13 botles to hold six pints, both sorts are the same size. The Clerk tells me he has about a gross of what he calls English quarts which will hold about a full gill more than a chopin, (which if they be not gone before you send) you may have them at 20sh: the gross As to the makeing botles just now they cannot for their furnace is down, and wont be ready these six weeks for bloweing any botles. These botles I mention are ready for takeing away when ever you please And the sooner the better ...[54]

The reference to bottles intended specifically for ale, as well as those for wine, is the first to have come to light during research for this thesis. Secondary references to ale bottles at this period are also scarce and it is likely, especially in view of their very similar appearance, that modern writers would catagorise them all as wine bottles - a further indication of the problems inherent in interpreting artefacts from the past.[55]

Another letter in the Montrose archive mentions the risk of the theft of bottles, and implies that they were too costly a purchase to be undertaken lightly. In a discussion about whether to buy pint or chopin bottles (the Scots pint being larger, the equivalent of three English pints), the Laird of Gorthie's correspondent suggested that the pint bottles 'would be more tempting to the thievish bodys who come about the house and that if one of them is broke its a double loss.' The writer also suggested that the Leith corks were 'as cheap and infinitely better' than those to be obtained in Glasgow, and that a large quantity should be bought there, when the occasion arose.[56]

A major reorganisation of the Glasgow co-partnership took place in 1748, following the death of John Park. His heirs wished to withdraw his three-twelfths share and the remaining stockholders decided to dissolve the company. The glasshouse, dwelling houses and other buildings, together with the utensils and materials for making bottles, 'the stock of bottles on hand, Debts and other Effects due to the Bottle-work Company in Glasgow', were offered for sale by public roup on 1 June 1748.[57] They were bought, for £3,010 sterling, by Richard Oswald.[58] The company's books had been balanced on 1 December 1747; all sales income, less the cost of materials and repairs to the furnace and other expences, was to go to the purchaser, who was also responsible for the company's debts of £605 2 5 sterling. Since the upset price was set at £3,000, and Richard Oswald bought the company for £3,010, it seems clear that the roup was a device for making a fresh start, with a sound capital base, and a reallocation of shares. The new shareholders were:

Richard and Alexander Oswald, equally between them	4 twenty-fourths
George Murdoch	4 twenty-fourths
John Rowan	3 twenty-fourths
William Raining	3 twenty-fourths
George Buchanan	3 twenty-fourths
William Robb	3 twenty fourths
Robert McNair	2 twenty-fourths
Thomas Sommers	2 twenty-fourths

Richard Oswald then made over to the company 'all the subjects effects lands and others belonging to the said botlework ... and profites arising ... since the first day of December 1747 ... with all right title or interest he has'. The capital was to be the £3,010 sterling, each of the partners contributing his share of that total, and his share of the company's debt. John Park's heirs were to be paid off.

Rules for the new co-partnership were also set out. No partner was to increase his share of the capital without the consent of the others; no one was to withdraw during the life of the partnership, which was set at eight years from 1 December 1747, or longer if they thought fit; accounts and books were to be kept regularly and open to inspection at all times; the books were to be balanced and inventaries taken every June, and were to be signed by the company, or the majority of them, and were to be binding. No one could withdraw any of their stock or profits until all the debts had been cleared, unless the annual profits were ten percent of the capital, and then only with stringent conditions imposed to ensure that the company's cash reserves did not suffer.

It was also agreed that policy decisions were to be made by the majority of shareholders, were to be binding on the whole company, and were to be recorded in the sederunt book. Borrowing on behalf of the company was allowed, but only with the agreement of the majority of shareholders, and again with safeguards; also, provisions were made for the death of a partner. Although the co-partnery was planned to continue for eight years, the company could be dissolved at any time if the majority so wished. The penalty for failing to abide by the rules was to be £100 sterling. The agreement was signed by all the partners between 15 December 1748

and 3 February 1750, and was registered in the burgh court book of Glasgow on 4 July 1750. The company still enjoyed the patronage of the Duke of Montrose, who bought 144 dozen quart bottles in 1750, at a total cost of £14 6 10 sterling.[59]

It is clear from the inventory of debts prepared for the roup that the partners themselves were major purchasers of bottles from the company. The largest debt was that of Messrs. Oswalds, merchants in Glasgow, for £638 8 7 (no doubt sterling). This was reduced, however, by an 'abatement for bad Bottles and disct. for Bottles Exported &c.' amounting to £119 8 7.[60] George Murdoch owed £149 6 1, after a £40 discount for bad bottles. As well as direct sales to customers, they appear to have used the services of middle-men like Robert Gilmor, who owed them £130 'for 1762 doz. Bottles Consigned him for Sale'. He received a discount for cellar rent and breakages. There were also entries for bottles shipped to Norway and Lisbon. Assets listed at the glassworks included 50 tons of soaper's ashes, 3 tons of old glass (cullet), 37 tons of kelp, 16 'potts' and 7 1/2 tons of clay. The bottles on hand consisted of:

45 doz. Cave B. @ 6d	£12
3 doz. Bigg Bottles	0 18 0
320 doz. pottles @ 3/4	53 6 8
14542 doz. Com 2 ?s @ 1/8	1211 16 8
1776 doz. Champ. ?s @ do.	398 0 0
1400 doz. Cha. pts. @ do.	116 13 4
2141 doz. Sq. Snuff @ do.	176 8 4
	1971 3 0[61]

In 1752, the co-partners planned to build a house for the use of the glass manufactory, but were asked by the dean of guild to leave fifteen feet of land fronting their site, to be incorporated, with the town's existing thirty feet, into the new road which the town still intended to build. The company suggested that they should exchange the required strip of land with one at the back of the site, with compensation for the difference in value, and the usual committee was set up to consider the matter. Their decision was not recorded in the minutes of the town council until some four years later, on 23 August and 1 October 1756, by which time they wanted the road to be sixty feet wide, but the other boundaries of the glassworks to remain the almost the same, to which the glass company appears to have agreed.[62]

It is possible, but is not specified, that the new building was connected with the planned production of window glass, which also began in 1752. An announcement in the *London Daily Advertiser* in May 1752 declared that 'At Glasgow they have begun a new branch of Manufacture, the making of the best Crown Window Glass'.[63] Because the glass was made in Glasgow, the bench mark for comparison was Bristol, not Newcastle, as it was on the east coast. The glassworks making the crown glass was not named, but the bottlework company appears to have been the only one operating at that date.

In November 1756, the company was again dissolved, and prompt payment of customers' debts was requested, or rather demanded, in a notice in the *Glasgow Journal* in December. The company's clerk was named as Andrew Scott, at the glass house, from whom common quart bottles were still available at 25s per gross, and champagne quarts[64] at 27s, 'for ready money only'.[65] George Buchanan senior could also supply them. It is quite possible, however, that this was simply a further reorganisation of the company, since the glassworks certainly continued to function with three of the original shareholders.[66] By 1764, Richard Oswald, George Murdoch and George Buchanan had been joined by three Newcastle glass men, Ralph Carr, John Cookson and James King; Andrew Scott, another Glasgow merchant; Michael Herries of London; and William and James Cunningham of the 'New Brewery of Glasgow'.[67]

By 1764, Jamaica Street had finally been built. The extent of the property belonging to the bottle work company is made clear by a Sun Insurance Company policy of May 1764, which places the Glasgow Bottle Work at the corner on the west[68] side of Jamaica Street, valued at £50 sterling. The company also owned a tenement on the east of the street, with some brick buildings between it and the bottle works, with a valuation of £500; a tenement 'adjoining the Bottlehouse on the East but not communicating therewith', £150; and a tenement 'only adjoining the above on the East having a small rivulet running betwixt it and the old Green, the whole Tenements fronting the River Clyde', £300. They insured warehouses and pott lofts adjoining the latter site on the north, 'but not communicating and adjoining the Bottle house on the west and communicating with it by a door from the pottlofts' for £500. All the buildings were of brick or stone and with slate roofs. As well as property insured for a total of £1,500, their stock of bottles, pots and clay were insured for a similar amount.[69]

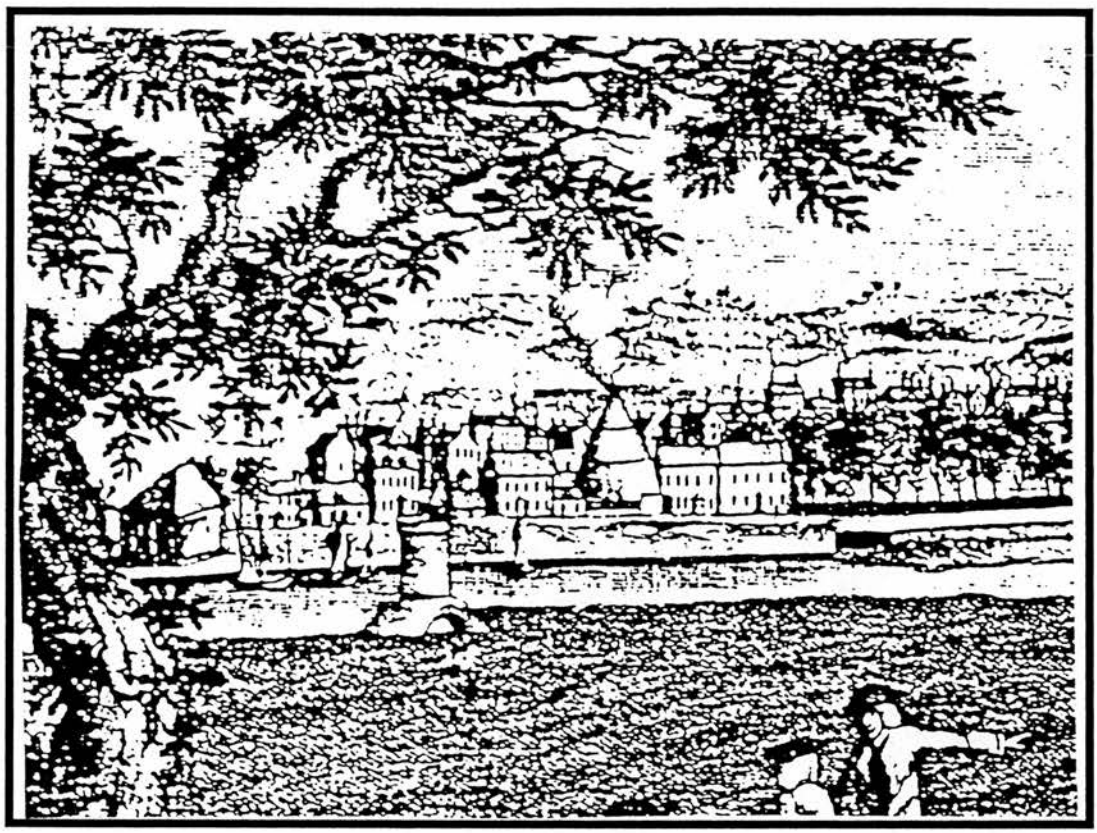


Fig.33. Detail from View of Glasgow from the south west, Robert Paul, 1764. (In *Extracts from the Records of the Burgh of Glasgow 1739-1759,* ed. R. Renwick (SBRS, 1916).

After sixty years on the Broomielaw site, and with the city of Glasgow set for rapid expansion in an era of ever increasing trade with the West Indies and America, the Glasgow Bottle Work Company was in a strong position to take advantage of the trading opportunities opening up on the west coast.[68] The extent of exports of bottles to the British colonies is discussed in chapter twelve. The origins and interests of the new partners are indicative of a new phase in Scottish glassmaking during the second half of the eighteenth century, which saw the involvement of breweries, direct investment from Newcastle and a major expansion in the business, with new glasshouses opening in Glasgow, Greenock and Dumbarton before the end of the century.

[1] See chapter 8. Montgomerie's petition was in competition with the patent of William Morison of Prestongrange.

[2] J. Denholm, *History of the City of Glasgow* (Glasgow, 1804), 416.

[3] J. Pagan, *Glasgow Past and Present*, ii (Glasgow, 1884), 81.

[4] A. Fleming, *Scottish and Jacobite Glass* (Glasgow, 1938), 146.

[5] W.R.Scott, *Constitution and Finance of English Scottish and Irish Joint Stock Companies to 1720,* iii (New York, 1951), 192.

[6] T.M. Devine and G. Jackson (eds.), *Glasgow, Volume 1: Beginnings to 1830* (Manchester, 1995), 80. The correct date is given in the 'Register of Companies to 1775' (typescript) in the Mitchell Library archives.

[7] ML, B10/15/5699. Disposition Patrick Montgomerie [etc.] to Richd and Alexander Oswalds [etc.], 1742.

[8] ML, B10/15/5698. 'Disposition the Town of Glasgow to Patrick Montgomerie Thomas Clark and John McGilchrist', 1742.

[9] *APS*, x, Appendix, 49a.

[10] See chapter 8.

[11] See chapter 1. Bracken ash was used in the French 'verre-de-fougère'.

[12] Scott, *Joint Stock Companies*, 130.

[13] The eight partners, among whom was the provost of Glasgow, a previous provost and three former baillies, had obtained a plot of land from the burgh, built the premises and bought, among others, a ship called the *George*. (NAS, RD2/86/1/541, Agreement betwixt the partners of the soaperie. 15 September 1675, reg. May 1702).

[14] Devine and Jackson, *Glasgow*, 79.

[15] Scott, *Joint Stock Companies*, 132.

[16] NAS, PA7/17. Supplementary parliamentary papers.

[17] NAS, PA7/17/154 (5).

[18] ML B10/15/5699.

[19] *Glas. Recs., 1691-1717*, 303.

[20] *ibid*, 303 .

[21] *Glas. Recs. 1691-1717*, 112.

[22] ML, B10/15/5698. Disposition the Town of Glasgow to Patrick Montgomerie Thomas Clark and John McGilchrist.

[23] R.H. Campbell, *Scotland since 1707* (2nd edn., Oxford, 1985), 45.

[24] ML, B10/15/5699 'Disposition Patrick Montgomerie [& partners] to Richard and Alexander Oswald [& partners]' 22 June 1742.

[25] ML, B10/15/5698. 'Disposition the Toun of Glasgow to Patrick Montgomerie etc', 1742.

[26] Scott, *Joint Stock Companies*, iii, 136; (see appendix 1).

[27] NAS, GD421/5/372.

[28] NLS, MS.1913.

[29] ML, B10/15/5698.

[30] *Glas. Burgs.*, i, 223; 239.

[31] *Glas. Recs. 1691-1717*, 361.

[32] NAS, GD220/6/700/32. Montrose mss. Accounts.

[33] NAS, GD220/6/700/33. Newman (*Dictionary of Glass*, 97), defines a double bottle as one 'divided internally into two separate compartments, each with its own mouth...'

[34] See chapter 8 and n.35 below.

[35] NAS, GD1/576/15. Memorial for Mr. Andrew Hutchinson.

[36] NAS, GD1/576/15. Papers are not individually numbered.

[37] Denholm, *History of the City of Glasgow*, 416.

[38] *Glas. Recs. 1691-1717*, 481-2.

[39] *Glas. Recs. 1708-1738*, 440.

[40] *ibid*, 457.

[41] NAS, CC9/7/57 pp 90, 331.

[42] ML, B10/15/5698. Disposition the Town of Glasgow to Patrick Montgomerie etc.

[43] ML, B10/15/5699.

[44] In comparison, the bottleworks company at Leith, set up in 1746, had an initial share capital of £2,250 sterling. See chapter 6.

[45] *Glas. Recs. 1739-1759*, 117.

[46] ML, B10/15/5976. Inventory of the Bottle work Company & Effects and debts ... 1 Dec. 1747. The currency is not defined, but was presumably sterling.

[47] ML, B10/15/5697. Disposition the Town of Glasgow to Richard and Alexander Oswald and other partners of the Glasswork, 1744.

[48] ML, B10/15/5697.

[49] ML, Register of Companies to 1775. (Typescript list of all the partnerships in Glasgow. The antecedants of the Oswalds are fully explored).

[50] *Glas. Burgs.*, i, 347; 371.

[51] T.M.Devine, *The Tobacco Lords* (Edinburgh, 1975), 183.

[52] *ibid*, 182.

[53] *Glas. Burgs.*, i, 485.

[54] NAS, GD220/5/1604/23. Montrose mss. Andrew Gardener, Glasgow to Mungo Graham of Gorthy, 22 May 1745. The currency is not defined, but was presumably sterling.

[55] This letter is discussed further in chapter 6.

[56] GD220/5/1654/1. John Smith to the Laird of Gorthie at Edinburgh, 6 July 1747.

[57] *Edinburgh Evening Courant*, 14 April 1748.

[58] ML, B10/15/6077. Contract of Copartnery amongst The Bottlework Company in Glasgow 1748.

[59] NAS, GD220/6/1079/15.

[60] ML, B10/15/5976. Inventary of the Bottle work Company's Effects and debts...' 1 Dec. 1747.

[61] It is difficult to interpret some of this list. A 'cave' = 'a case for holding bottles of wine or spirits' (Robinson, *Scots Dictionary*, 89), so perhaps 'cave bottles' were designed to fit a case. It seems reasonable to guess that 'Com 2's were chopins; the champagnes were usually for strong ale. Glass snuff bottles are uncommon. Small horn-shaped crystal snuff bottles are known, (Dr. D. Lamb, pers. comm.), but since these snuff bottles were cheap and made at a bottle factory, they were probably storage jars for retailers.

[62] *Glas. Recs. 1739-1759,* 485-6.

[63] *The London Daily Advertiser*, 5 May 1752; (NLS Mf.83/66 Early English Newspapers).

[64] O. Jones, a Canadian archaeologist, has investigated the 'champagne' bottle, using English primary material. She concluded that 'there is absolutely no evidence to suggest that the "champagne" bottles were intended exclusively for champagne', and suggested that the term may have referred to a slightly different metal, size or shape. (O. R. Jones, *Cylindrical English Wine & Beer Bottles 1735-1850* (Ottawa, 1986), 12-13). Custom records show that champagne bottles exported in 1787 were, in fact, used for strong ale. (NAS, E504/22/32).

[65] Presumably sterling.

[66] *Glasgow Journal*, 27 December 1756, in Pagan, *Glasgow,* ii, 83.

[67] Guild Hall Library, MS 11,936, Vol. 154, policy no. 209215, 22 May 1764.

[68] Plans and prints show the glasshouse to be on the east of Jamaica Street and the bridge, rather than in the position suggested by this policy.

[69] *ibid*; all valuations in sterling.

[70] See chapter 12.

CHAPTER 12

CONCLUSION

The period covered by this thesis - 140 years - encompassed immense political and economic changes in Scotland, from the early days of the union of crowns, to the aftermath of the union of parliaments. It also saw considerable progress in commercial practices and the persistence of the glass industry as part of the country's manufacturing base. The commercial background and the history of the individual glassworks have been discussed in earlier chapters, but it would seem useful to examine further some of the issues which affected the glass industry as a whole and to conclude by looking briefly beyond 1750, to the expansion of glassmaking during the rest of the century.

First, there was that essential and determining factor: fuel. In 1610, when Sir George Hay founded the Scottish glass industry, wood was the only fuel used in glasshouses and it was argued in chapter four that he initially used the resources of his woodland on the shores of Loch Maree to produce glass under the patent of monopoly. The technology changed rapidly, however, and by 1615 coal-burning was both possible and required by statute in England and Wales. Scotland was fortunate to have readily accessible great-coal in the mines along the Forth, which burned cleanly. By the 1660s, Scottish coal was being supplied to the manufacturers of northern Europe, including 'brewers, sugar-bakers, smiths, soap-boilers, glass-makers ...'[1] Whatley has shown, however, that by the end of the seventeenth century the most accessible coal had been worked out, many of the pits near the Forth were experiencing severe flooding and much of the readily available coal was of poor quality, best suited to heating the saltpans.[2]

Whatever the difficulties experienced by the coal owners, the proximity, or ready availability, of coal, always dictated the siting of the Scottish glasshouses and supplies appear generally to have kept pace with demand. Sometimes it ran out because of problems at a mine, as it did at Morison's Haven in 1708 but usually if that happened, there were alternative sources available. In some instances, consumption of the landowner's coal was the raison d'être for the glassworks. At Leith, on the other hand, all coal came in by sea. In the first quarter of 1753 a total of 252 tons was shipped to the glassworks from Alloa, Dysart, Throsk and Limekilns.[3] Despite the undoubted problems of the coal owners, supplies of fuel do not seem to have caused difficulties

for the glass industry up to 1750, and they were, of course, a vital element in its expansion during the second half of the eighteenth century.

Manpower also merits discussion. A list of all the men known to have worked in the glasshouses in Scotland appears in appendix two. Most of the names are English, and most were itinerant, (that is to say, they moved to where employment was) and only minor change is evident through time. The first names on the list are all Italian - men known to have been recruited either from Murano or from Antwerp, whose skills were needed by Sir Robert Mansell in his English glasshouses and who, despite their denials, were very likely to have been bribed to go to Scotland. They worked mostly at Morison's Haven, where the owner of the glassworks was also a foreigner, a Dutchman, Sir Philibert Vernatti. After his death and the departure of his workforce, in *c.*1646, only one Italian, Cornelius Visitella, seems to have stayed on. He probably established the first glass-making family permanently resident in Scotland, although there is no mention of the name after 1707. In the early days, local people were employed only as labourers; later, too, although the names of Thomson and Montgomerie do recur, there is no evidence to show that Scots had acquired glassmaking techniques, although that was certainly to change later in the century.

The list of glassmakers is far from satisfactory, however, since the parish registers are not consistent in noting occupations, and the seventeenth century tax rolls do not record even known glassworkmen. Robert Glasgow, for example, who was definitely a glassmaker living and working in North Leith in 1695, is simply listed as 'servant' in the hearth tax record.[4] The list of occupations from the poll tax, printed by Dingwall, includes three soap-boilers but no glassmakers,[5] although it is known that Leith glassworks was in operation during the 1690s. So Robert Glasgow is presumably included in Dingwall's table as one of the 1,084 male living-in servants in Edinburgh.[6] As she points out, the category is possibly problematic and 'some males designated servant were in fact trade journeymen in craft households',[7] but Glasgow was one of several glass-makers who have somehow disappeared in contemporary statistics.

The problem of defining occupations is further highlighted by the hearth tax listing of Alexander Ainslie as 'clerk to the glasswork at Leith'. Dingwall's list includes twenty-two clerks. Her appendix is drawn from the poll tax records, but if Ainslie were listed there as a 'clerk', it would be misleading. The clerk of a glassworks was not simply a keeper of records, but was more akin to what, in present-day terms, would be the manager, with a variety of duties including procurement of materials, payment of

wages, keeping the accounts and hiring workmen.[8] Ainslie is variously described elsewhere as a carpenter and a merchant. He was also a half-partner in a cork-cutting business and part-owner of the glasshouse; very much a business man of his time, so the simple category 'clerk' would hardly do justice to his position. The lack of records for men working in the glass industry may well have contributed to its very low profile in secondary works on manufacturing in the seventeenth century.[9]

Relations between glassmakers north and south of the border seem to have remained much the same over the 140 years. Although the external economic conditions were quite different in 1730 from those in 1630, the problem of competing with English products remained. For most of the period, England was a source of manpower and materials, the arch-rival for markets and the setter of standards for products. In 1621, glasses from England were placed in Edinburgh Castle to act as prototypes for the new Scottish industry; in 1734, the clerk at Port Seton complained that they would never manage to sell the window glass made there, because it was inferior to that from Newcastle. It is, however, clear, that the English regarded the Scottish industry with equal antagonism. They resented the loss of skilled men throughout the period, were envious of the wine imports from France (and later Portugal) which required bottles, and apparently deliberately sabotaged the Port Seton glassworks in 1734, despite the fact that it was both distant and ailing. But it was a highly competitive trade, so such tactics are not surprising. Given the strength of the English industry, the surprise is, perhaps, that Scottish glasshouses survived the Union at all. Campbell suggests that, after 1707, 'the industrial successes lay only in sectors, such as sugar refining, which were not competitive but complementary to the English economy'.[10] There was never any question of the Scottish glass industry being complementary to the English, from 1610 onwards it was at best an irritant, at worst a threat, to the English manufacturers.

One of the early obstacles to the success of the Scottish industry was the patent to make glass, which remained in the hands of the Hay family. Initially, it enabled Sir George Hay to establish the industry very successfully, and he was clearly the éminence-grise behind the business until he sold his rights in 1627. Thereafter, however, only one of his descendants appears to have been involved with or supported the industry,[11] but the family continued to hold the patent and to extract considerable sums from those they licensed to make glass under it. This unproductive financial burden cannot fail to have been detrimental to a manufacturer struggling to establish a profitable business; Robert Pape had to pay 1,400 merks a year in 1663,

in addition to all the other start-up costs.[11] This drain on the industry continued until at least 1678, the last payment date recorded in the known documents, and probably longer. It is interesting, if fruitless, to speculate on what might have happened if the Hay family had not retained their stranglehold.

The glass itself did change during the period - the finer quality product of the first two-thirds of the seventeenth century was the light, more malleable soda glass; after the 1670s, the metal changed, to produce heavy, softer, more brilliant 'flint glass', containing lead oxide. Bottles changed dramatically, from the fragile, clear containers used before the 1650s, to the thick, strong, heavy, dark chopins, mutchkins and quarts, in which wine and ale could continue to mature, and which were exported in large numbers during the eighteenth century.

Production methods, however, changed hardly at all. Bottles, window glass, drinking vessels, hour-glasses, were all blown. Some standardisation of bottle sizes was achieved by blowing the body into a mould and then adding the neck and string-rim, but the technique of mould-blowing had existed since second-century Egypt. It was not until the 1830s that glass was pressed into moulds, and much later that any automation arrived in the industry.[12] The construction of the coal-fired furnaces was basically similar throughout the period, although, without archaeological evidence, the layout of the Scottish furnaces can only be guessed at. The external structure changed dramatically after the turn of the century, however, from the wooden hovel described at North Leith in 1687, to the familiar glasshouse cone, shown in Paul Sandby's picture of the South Leith glassworks in 1751.

Public demand for items made with glass changed and grew with increasing economic prosperity among the middle class. Building standards improved and window glass became much more widespread, particularly after the invention of the sash window. The small lozenges depicted on John Wauch's tombstone were replaced by square or rectangular panes, usually of crown glass. Window glass was made in Scotland at various periods, certainly under Hay, at Leith in the 1670s and at Port Seton, but it appears often to have been of doubtful quality and unable to compete with Newcastle. From 1752, however, crown glass was being made in Glasgow and, from 1781, at Dumbarton, where it was a particularly successful product.[13]

It has been emphasised several times in this thesis that bottle production was the saviour of the Scottish glass industry, since demand for them was consistently high,

thanks to the highly developed wine and ale trades. The characteristics of the 'English' bottle, described in chapter one, ensured its popularity, both in the domestic market and overseas and, fortunately for both the Scottish and English manufacturers, the technology eluded the French glassmakers until well into the eighteenth century. More luxurious items were also made in Scotland, certainly during the Hay period, when the Italians were working at Morison's Haven and exporting their wares to London; later relatively smaller quantities were produced. Although bottles were the 'bread-and butter' product, drinking glasses were also made to order at Morison's Haven in William Morison's time, while hour-glass vials and other more fancy items were made at Leith in the late 1670s. It would be unwise to assume that the relatively few references to products remaining in the archives provide an accurate reflection of all that was, or could be, produced at the various glassworks. Although the makers of broad or crown glass would not have blown bottles, because their skills were quite different, as were their materials, tools and furnaces,[14] skilled vessel-glass blowers could make a range of wares, as the contract at Leith between Sir James Standsfield and the two Englishmen from Dublin illustrates.[15] The best that can be said is that we now know some of the objects that were made; there may well be others for which no evidence has yet come to light.

It is clear from the histories of the individual glassworks that, apart from the very early period under the powerful patronage of Sir George Hay, the Scottish glass industry always had to work hard to survive, especially if English glass was, legally or otherwise, available. It is equally clear, however, that entrepreneurs continued to invest in it, so, although there are no figures available to show what profits were made, it must be assumed that some were. Some of the set-backs to the manufacturers were just bad luck: John Scarlett died just after setting up a new glassworks in the cave at Wemyss; he had sound backing, a founder under contract, and a comprehensive leasing agreement with the land and coal owner, all of which probably came to nothing (but without the evidence which probably exists in Wemyss Castle, we do not know). Edward Dagnia died within two years of Robert Pape engaging him to set up the glassworks in the Citadel at Leith, and his family moved away to Newcastle to found a dynasty there; Sir James Standsfield was murdered shortly after engaging some experienced glassmakers capable of producing a wide range of items at North Leith. Some problems, on the other hand, resulted from plain bad management, with Port Seton the outstanding example of a bungled opportunity. Some of the glassworks have yielded little or no information - the question of Newhaven looms large and there is still much to learn about Kirkcaldy. The basic fact

remains - glassmaking in Scotland was almost continuous from 1610 to 1750, which, in itself, makes it unique among the early manufacturing industries.

Whether survival is synonymous with success is open to question but it is, at least, an essential prerequisite. Certainly the long-standing presence of a glass industry in both Leith and Glasgow provided the base on which later expansion in both places was built. After 1747, things really did begin to change. A new glasshouse was built at South Leith, specifically to produce bottles, by a large, well organised co-partnership, many of those involved being in the wine trade. Similarly in Glasgow, the small bottleworks, which had been quietly operating for over forty years, was taken over by a new, dynamic co-partnership of merchants. On both sides of the country, glassmakers were ready to take advantage of the expanding markets, both at home and abroad, and they do not seem to have been deterred by the tax which was imposed in 1745 on the materials used in the glass batch. This tax, which has been the subject of much debate, and which involved excise officers virtually taking up residence in the glasshouses, in order to weigh the ingredients placed in the pots and the end products, was increased in the 1770s and 1780s. It was not repealed until 1845, by which time it had caused lasting damage to the industry. It has been discussed very fully by Catherine Ross in her thesis on the Newcastle glass industry and, since it came too late to effect the period of this research, will not be examined here.[16]

Although a burden to the industry, the glass tax provides an aid to the researcher; after 1745 all the customs accounts record the weight of glass exported and its source. Since there is a virtually complete run of customs quarterly accounts from all Scottish ports after 1742, it is possible to see the volume and pattern of glass exported after that date. The Leith books show, for example, that, between 1745 and 1795, exports of chopin bottles increased from 277 dozen in 1745 to 16,165 dozen in 1795-6.[17] (Table 1).

The Leith figures also show that, although at first they were few in number, there were shipments of glass, especially bottles, to America as well as Europe throughout the last fifty years of the eighteenth century. In 1745, only the *Magdelen* sailed to South Carolina, and she did the same trip in 1747. During the rest of the century, until the War of Independence, bottles and, to a lesser extent, other glass, were exported to Virginia, South Carolina, Charlestown, Granada, Jamaica, Tobago, Barbados, St. Lucia, and St. Christopher. The destinations in Europe are to be expected, since the

trade from Leith was long-established, but the number of trips to the Americas is more surprising, and is probably indicative of competition between the Scottish glassmakers for the lucrative colonial market. The Leith accounts for 1795-6 show that American independence appears to have affected their trade. There were voyages to Quebec, New York and Jamaica, but the remainder were all to Europe.

Table 1. Bottles exported from Leith (dozens).

A new, specialised, glass product is also evident in the customs accounts - one which is particularly associated with Leith - the vitriol bottle. Thomas Summers' ability to blow huge bottles, which was reported in a Manchester newspaper in 1751, was put to good use in supplying these containers to the vitriol works at Prestonpans, which was set up in 1749. In 1757, 100 Leith bottles, each protected by a basket, containing 11,280 lbs of oil of vitriol, were exported to Rotterdam.[18] Each bottle, therefore, contained almost 113 lbs of vitriol. Even larger volumes are shown in later shipments, the average bottle containing about 120 lbs.[19] In 1795, a total of 1,226 of these monster bottles were exported from Leith, along with considerable quantities of crown glass for windows and flint glass, all made at the greatly expanded Leith glassworks.[20]

The exports from Port Glasgow tell a similar story. In 1748 there are two entries in the ledger, for 437 dozen quart and 10 dozen pint bottles bound for America. By 1767 a large amount of glass of all types was being exported, including 11,578 dozen bottles from the Glasgow bottleworks. These are virtually all described as 'quarts', with the occasional 'double quarts' and chopins. However, one entry is for 'quart or chopin' bottles, so it is difficult to know whether the two sizes were, in fact, synonymous. As well as glass produced in Glasgow itself, there were shipments of 1,630lbs of crown glass from Newcastle and Bristol; flint glass from Newcastle; 13,394lbs of green glass, including 7,858lbs from Edinburgh,[21]and 147 looking glasses.[22] A high proportion of the bottles from Glasgow were intended for strong ale.

J. Gibson, in his *History of Glasgow,* published in 1777, produced lists of all the exports from Glasgow in 1771, including glass, which he listed solely by weight. The glass exported to the Americas, according to Gibson's list, is shown in Table 2.[23] During the last fifty years of the eighteenth century, the Scottish glass industry expanded beyond all recognition, both in terms of size and range of products. In 1750, Lady Frances Erskine of Mar established a bottleworks at Alloa, subsequently the site of glassmaking for more than 200 years, the history of which has been recorded by John Carvel.[24] In 1777, the Dumbarton glassworks was founded. It remained operational until 1850, and has been researched by John Logan.[25] Other glassworks were built at the end of the century, two fairly short-lived ventures at Greenock and Dundee; much more successful enterprises at Glasgow and Leith; to be followed in the nineteenth century by those in Edinburgh, Portobello and Perth. More information has been published about the post-1750 glassworks than those of the earlier period, but further research remains to be done if the full story is to be told.

But what is the future for the past?[26] The physical sites of the glassworks described in this thesis remain and any further information about them must come from archaeologists. Westpans is the only known site of the pre-1750 glassworks to have been been investigated (see appendix 3), and most are at present inaccessible, but it is possible that re-development in the future might enable examination of some of them. A brief survey of the locations, and their current use, has, therefore, been presented in appendix 3, including, where appropriate, photographs of the location or marked maps.

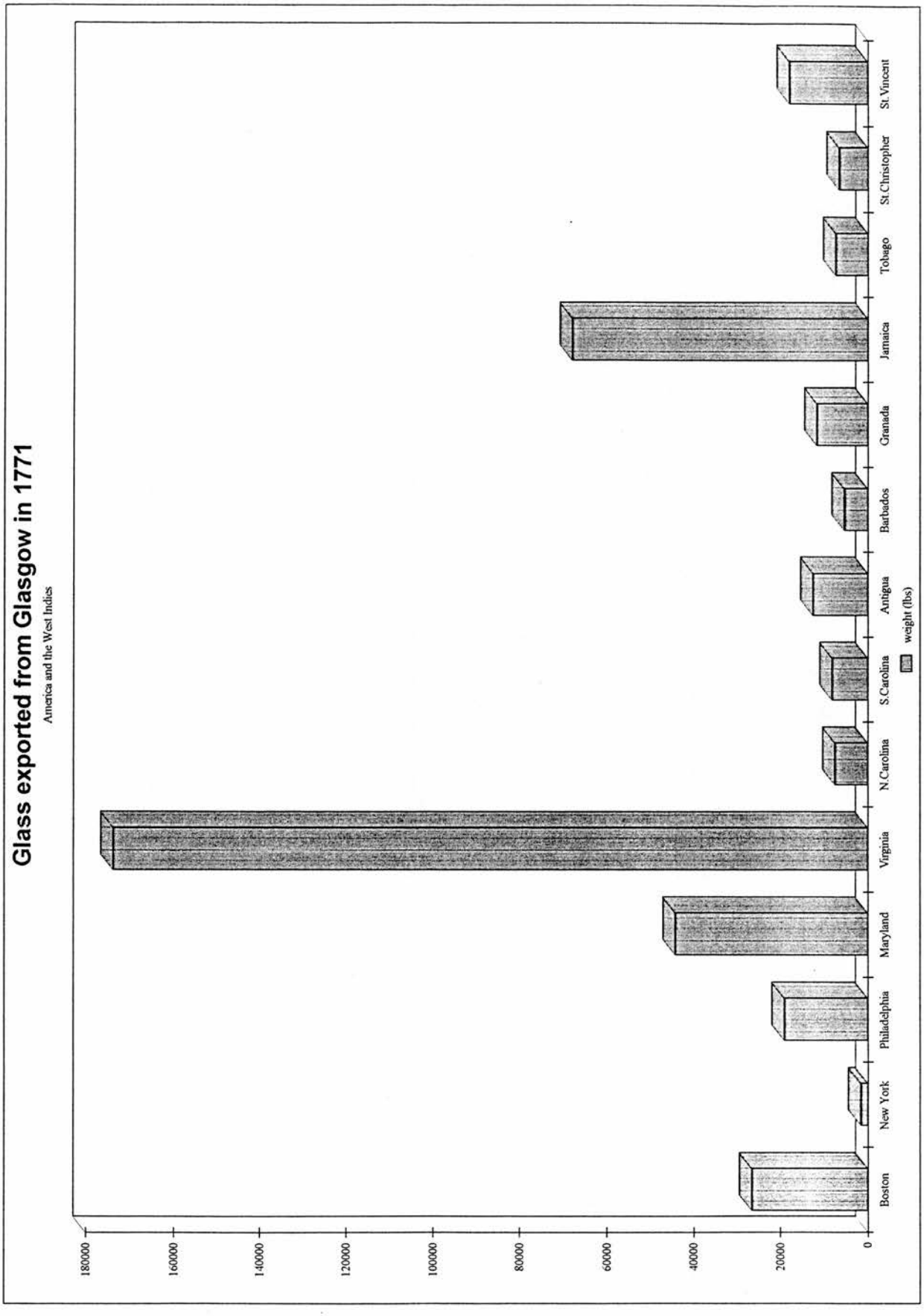


Table 2. Glass exported from Glasgow to the Americas, 1771.

Despite the increasing interest in Scotland's industrial heritage since the 1960s, when the Scottish Committee for Industrial Archaeology was established, a huge number of sites have been destroyed. John Butt's book *The Industrial Archaeology of Scotland* was published in 1967,[27] followed by *Industrial Archaeology in the British Isles*, with Ian Donnachie, in 1979.[28] These, and numerous articles and papers by others interested in the field, raised public and political awareness to the extent that in January 1994, the Scottish Office produced two important publications: National Planning Policy Guideline 5, called *Archaeology and Planning*, and Planning Advice Note 42, *Archaeology - the Planning Process and Scheduled Monument Procedures.*[29] These put the onus on local authorities to take into consideration any potentially important archaeological sites in their planning processes, and set out the guidelines to be followed. Unfortunately, funding is often a problem, and many of the requirements remain voluntary.

The need for public vigilance, greater interest by the local authorities, more co-operation between agencies and more clearly defined responsibilities is illustrated by the fate of the pottery sites on the Scottish east coast, some of which are also associated with glassworks. Although before the 1994 guidelines were in place, it is to the lasting shame of the authorities, who were well aware of their importance, that all the Mid- and East-Lothian pottery sites have been demolished, at least above ground, most of them in the 1980s. A restrained paragraph in the catalogue *Pots at the 'Pans* described the situation in 1990:

> The last decade has seen the total destruction of many former pottery sites. Although there have been some archaeological successes, due mainly to the efforts of a few individuals, it must be admitted that there has been a haphazard approach to the problem of the loss of our ceramic heritage. Lack of communication between the agencies charged with preserving and recording our past has contributed to this.[30]

The authors went on to suggest a complete survey of the area to identify and protect remaining sites and, specifically, that William Littler's porcelain factory should be the subject of proper investigation. Despite this, in 1990, a house was built on part of that site and it was only thanks to a concerned local resident, the prompt action of archaeologist George Haggarty and the co-operation of the owner, who delayed building for a fortnight, that a rescue dig was undertaken, funded by Historic Scotland. This site is significant not only for its ceramic history, but it is also very likely to have been the area used by Jacob Visitella for his glassworks in the mid-

seventeenth century, although that was not known at the time of the dig, which will be discussed in appendix 3. The whole of the Westpans area has now been scheduled by Historic Scotland.

There are, of course, many more glass furnace sites in England, dating back much further than in Scotland, so a considerable amount of archaeological work has been done there. The seventeenth-century English glass furnaces excavated at Haughton Green and Kimmeridge[31] provide evidence of the glass vessels produced in the period - essential information, since very few whole pieces have survived. Pottery sites usually contain large numbers of shards *in situ*, and inevitably a huge volume of rejects and kiln failures dumped nearby. Even a rescue dig in the teeth of the bulldozers can yield numerous boxes of broken, and sometimes whole, pots, moulds, saggars and kiln furniture for analysis. The early glass furnaces, on the other hand, were small and their rejects were re-used as cullet, so any surviving shards tend to be tiny and in much smaller numbers, and soda glass, in particular, was very fragile. There is also the opposite problem, that some of the cullet on site may have been imported. Old glass furnaces tend to be less obvious than pottery sites, leaving fewer clues behind to alert the potential developer or planner.

We now know from documentary evidence that during the seventeenth century a wide variety of domestic glass was produced in Scotland, as well as much larger quantities of bottles and some window glass. There is evidence that sealed and plain wine and ale bottles were made and supplied to merchants, vintners and the wealthy. We do not, however, *know* what any of these objects looked like, however much we may guess. Nor do we know to what design the Scottish furnaces were built; how many hearths they contained; when the first brick cone was constructed; whether any coloured glass was made. There are many more questions and no answers. We can, of course, just assume that the English excavations can provide them, but that must surely be unacceptable in Scotland in 1999.

Hopefully, the documentary evidence provided in this thesis, together with more information which must inevitably come to light in the future, will enable the small number of sites of the early Scottish glass industry to be preserved and eventually explored, putting them physically, as well as historically, on the map - as they deserve.

[1] J. Hatcher, *The History of the British Coal Industry, Volume 1: before 1700* (Oxford, 1993), 103.

[2] It is interesting, however, that although the Halketts of Pitfirrane obtained permanent exemption from export duties after the Union because their coal was 'only fit for the Smiths forge' (Whatley, 'Salt, Coal and the Union of 1707', *SHR*, lxvi, (1987), 32) they regularly supplied coal to the glassworks at Leith, Kirkcaldy and Morison's Haven.

[3] ECA, Register of Shore Dues at Leith. Four of the entries were not fully recorded, but all the rest were 18 or 20 tons, so a similar figure has been assumed for them. My thanks to Sheila Forbes for this information.

[4] NAS, E70/4/10; see chapter 6.

[5] H. Dingwall, *Late 17th-century Edinburgh* (Aldershot, 1994), appendix 4, 289-93.

[6] *ibid*, 292.

[7] *ibid*, 44.

[8] NAS, GD305/1/160/91. 'Observes on Alexander Ainslie's Accompts'.

[9] There is no mention of glassmakers or a glassworks in Dingwall's very comprehensive thesis, although the North Leith glassworks was operational during the 1690s. This may be due to the exemption from taxes thanks to the glassworks' status as a manufactury (see chapter 6, n.148). (H.M. Dingwall 'The Social and Economic Structure of Edinburgh in the late seventeenth century', (University of Edinburgh Ph.D. thesis, 1989).

[10] R.H. Campbell, *Scotland Since 1707* (Edinburgh, 2nd edn., 1985), 8.

[11] George Hay, 2nd Earl of Kinnoull probably invested in Vernatti's glassworks in the 1630s. (See Chapter 5, pp.114-5).

[12] See chapter 6.

[13] The moulds used by the early glassmakers in Scotland would have been of a simple 'dip' type, without hinging. At Darney, in north-eastern France, once home of the Hennezel family, a glassworks is still in operation and men can be seen blowing into foot or hand-operated hinged moulds (personal visit, 1996). Apart from the gas-fired furnaces, the glass there is made in much the same way that it was in the seventeenth century - Moses Henzell (chapter 6) would feel quite at home.

[14] J.C. Logan, 'The Operations of a Glassworks in the Industrial Revolution', *Industrial Archaeology*, ix (1972), 177.

[15] NLS, DEP.175, Box 35, bundle 64. This inventory was discussed in chapter 6, it lists the tools used in the white and green glass furnaces quite separately.

[16] NLS, DEP.175, Box 29, bundle 43. See chapter 6.

[17] C. Ross, 'The Development of the Glass Industry on the Rivers Tyne and Wear'

(Newcastle University Ph.D. thesis, 1982), 321-364.

[18] NAS, E504/22/2; 7; 13; 21; 32; 39.

[19] NAS, E504/22/7.

[20] NAS, E504/22/21.

[21] NAS, E504/22/39.

[22] There is no clue to what type of objects these were, possibly cheap drinking glasses and apothecary bottles.

[23] Unfortunately, the entries are not sufficiently consistent to enable tables to be produced.

[24] Since Gibson does not specify the source of the glass, however, it is interesting more for the relative volume of glass sent to the different destinations than for information about the amount of glass made in Glasgow.

[25] J.L. Carvel, *The Alloa Glass Work* (privately printed, 1953).

[26] Logan 'Operations of a Glassworks'.

[27] Adapted from 'Scotland's historic towns: a future for their past', title of a paper given by Dr. P. Dennison to the Society of Antiquaries, 11 Jan. 1999.

[28] J. Butt, *The Industrial Archaeology of Scotland* (Newton Abbot, 1967).

[29] J. Butt and I. Donnachie, *Industrial Archaeology in the British Isles* (London, 1979).

[30] I am grateful to Lily Linge of Historic Scotland for this information.

[31] G. Dalgleish, G. Haggarty, P. McVeigh, *Pots at the 'Pans* (Edinburgh, 1990), pages not numbered.

[32] R.H. Vose, 'Excavations at the 17th-century glasshouse at Haughton Green, Denton, near Manchester', *PMA*, xxviii (1994), 1-71; D. Crossley, 'Sir William Clavell's glasshouse at Kimmeridge, Dorset: the excavations of 1980-81' *Archaeological Journal*, cxliv (1987), 340-82.

APPENDIX 1: CO-PARTNERSHIPS

The following lists give the names of men involved as partners or shareholders in some of the manufactories established during the late seventeenth and early eighteenth centuries. Partners in glassworks are shown first, grouped by site, followed by other partnership lists which have come to light during the course of research. Names in bold type indicate partners in a glassworks who were also involved with other named industries.

Glassworks at North Leith, 1678

Archibald Earl of Argyll }
Colin Earl of Balcarras } one quarter share between them
Sir James Standsfield of Newmilns }
James Sinclair of Roslin } three-quarter share between them
(NAS, RH15/102/6/3/7).

Glassworks at North Leith, 1688

George Viscount Tarbat
John Watson merchant
Andrew Powrie druggist
John Dehine glassmaker
Alexander Ainslie merchant
(NAS, RD12/34/9).

Glassworks at North Leith, 1699

Viscount Tarbat one-seventh, value	£25
Robert Blackwood two-sevenths	£50
James Balfour for Andrew Pourie two-sevenths	£50
James Balfour (bought from John Watson) one-seventh	£25
Alexander Ainslie one-seventh	£25

(NAS, GD305/1/166).

Glassworks at North Leith, 1708

George, now Earl, of Cromartie
James Balfour younger
James Blackwood
Alexander Ainslie
(NAS, GD305/1/159/5).

Glassworks at North Leith, 1715
Robert Wightman merchant
James Balfour of Pilrig
(NAS, RS27/110 ff.80-93).

Glassworks at North Leith, 1746 (descriptions as in contract)

Archibald Stewart and company, merchants in Edinburgh	1 share
Laurence Dundass and John Inglis, merchants in Edinburgh	1
Hugh and Robert Clerks, merchants in Edinburgh	1
John and Robert Wilsons, merchants in Edinburgh	1
John Stephtian merchant in Edinburgh and Walter Scot, merchant in Leith	1
Thomas Allan, merchant in Edinburgh and Thomas Hyde, merchant in Leith,	1
Alexander Hunter, merchant in Edinburgh	1
William Macdougal, merchant in Edinburgh	1
John Jolly, merchant in Edinburgh	1
George and James Milns, merchants in Leith	2
John Jamieson, merchant in Leith*	1
James Cheap } William Bell } John Graham } all wine coupers in Leith Peter McNab } George Bell }	1
Thomas Summers glass maker	2

(NAS, RD14/87/1747).

*probably the son of James Jamieson, whose yard John Sime bought in 1749. (Mowat, *Leith*, 233).

Glassworks at South Leith, 1756

Archibald Stewart, now merchant in London	1 share
John Forrest, merchant in Edinburgh	1
Alexander Hunter, merchant in Edinburgh	1
John Jamieson, merchant in Leith	1
John Inglis, merchants in Edinburgh	1
William MacDougal, merchant in Edinburgh	1
Alexander Innes, merchant in Leith	1
Hugh and Robert Clerks, merchants in Edinburgh	1
John and Robert Wilsons, merchants in Edinburgh	1
John Stephen, merchant in Edinburgh and Walter Scott, merchant in Leith	1
Charles Smith, merchant in Bologne	1/2
Thomas Hyd, merchant in Leith	1/2
James Cheap, wine cooper in Leith	1/2
William Bell, wine cooper in Leith	1/2
James Cheap, John Grahame, William Bell, George Bell and Patrick McNab, all wine coopers in Leith	1
James Thompsone, clerk and cashier to the bottle manufactory	1

(NAS, RD4/96/555).

Glassworks at Wemyss, 1698

The shares, valued at £44 scots each, were allocated as follows:

David Burton	4
George Watson	2
?Lychester Douglas	2
William Gordon	1
Gaven Hamilton*	1

(NAS, RD2/81/848 and RD12/38/1088).

*Helen Balfour (1709-1793) fourth child, and eldest daughter, of James Balfour of Pilrig married a Gavin Hamilton in 1732. He was the son of Professor Hamilton, principal of the University of Edinburgh, and was a publisher and bookseller. (B. Balfour-Melville, *The Balfours of Pilrig* (Edinburgh, 1907), 84).

Glassworks at Morison's Haven, 1698

William Morison of Prestongrange
Patrick Steill, vintner, Edinburgh
David Burton, glazier
George Livingstone, 'taylier'
George Livingstone, wright
John Mathie, skipper
Alexander Smith
Daniel Tittery, glassmaker
Edward Hawkes
Janet Trotter, Lady Craigleith
Sir William Binning
James Smith of Whitehill
Peter Simpson, 'slatter', burgess in Cannongate
William Monypenny, advocat
Gideon Elliot, chirurgeon apothecary
(WRH, CS21/447. None of the papers in the box or bundle is individually numbered).

Glassworks at Port Seton, 1728

The Lord Drummore
Robert Dalrymple for himself and as proxie for the Earl of Stair
Anthony Murray
Hugh Dalrymple
Archibald Robertson as proxie for Colonel Charles Cathcart
William Grant
Alexander Garden [of Troup]
Thomas Belches
James Stewart
Thomas Fordyce
Robert Lumsden as proxie for Sir Arthur Anstruther
William Adam, architect
George Buchan
(NAS, GD345/765/2).

Glassworks at Glasgow, 1700

James Montgomery of Pearston, younger

William Smith	all merchants in Glasgow
Thomas Clark	

(ML, B10/15/5698).

Glassworks at Glasgow, 1742

Patrick Montgomery, merchant	four-ninths
Thomas Clark	two-ninths
plus half of William Smith's	three-ninths
shared with	
John McGilchrist, writer in Glasgow	

(ML, B10/15/5698).

Glasworks at Glasgow, 1744

Richard and Alexander Oswald	two-twelfths
George Murdoch, merchant	one-twelfth
John Rowan, merchant	two-twelfths
John Park, merchant	three-twelfths
William Rainie	two-twelfths
Thomas Somers, bottle maker	two-twelfths

(ML, B10/15/5699).

Sugarworks at Leith, 1682
Sir Robert Baird
Mungo Wood
Robert Douglas
The clerk of the works was David Forrester
(NAS, RD3/56/330. Bond).

Wester Sugar House, Glasgow, 1667
Peter Gemmill
John Cauldwell
Frederick Hamilton
Robert Cumming
(T.C. Smout, 'The Early Scottish Sugar Houses', *SHR*, xiv (1961), 241)

Easter Sugar House, Glasgow, 1669
John Corse,
Robert Corse,
James Peadie,
John Luke
Robert Boyle
(*ibid*, 242).

South Sugar House, Glasgow, 1700
Daniel and Mathew Campbell

North Sugar House, Glasgow, 1727
James Montgomerie of Perstoun
Patrick Montgomerie, his son
Peter Murdoch
Andrew Cochran
John Coulter
Andrew Buchanan
Neil Buchanan
William Gordon
(Extracts from the Records of the Burgh of Glasgow 1708-1738, (SBRS, 1909), 274).

Glasgow soaperie, 1675.

Sir George Maxwell of Nether Pollock	one-eighth
William Anderson, provost of Glasgow	one-eighth
John Bell, late provost of Glasgow	one-eighth
John Anderson, late baillie in Glasgow	one-eighth
William Anderson, late baillie in Glasgow	one-eighth
James Colquhoun, late baillie in Glasgow	one-eighth
John Campbell of Woodside	one-sixteenth
John Lowke (Louck, ?Luke), merchant burgess of Glasgow	one-sixteenth
John Graham, writer in Glasgow	one-eighth

(NAS, RD2/86/1/541. Agreement betwixt the partners of the soaperie, 15 September 1675, registered May 1702.)

Soapworks at South Leith 1699

James Balfour

Adolphus Durham

(NAS, SC39/76/9. Register of Deeds, Sheriff Court of Midlothian, Vol. 6. Disposition James Balfour merchant in Edinburgh to James Balfour, his eldest son and other children, 21 Oct. 1699).

Newmilnes cloth manufactory, 1644

Sir Hepburne of Humbie, senator of the college of justice
James Riddell, merchant burgess of Edinburgh
William Sykes, English clothier
(NAS, GD1/395/2. Contract of co-partnership, 15 March 1644).

Newmilnes cloth manufactory, 1682, and the amount invested.

Sir James Standsfield	£300 sterling	
Thomas Douglas	200	
Robert Blackwood elder	200	
Robert Blackwood younger	200	
George Drummond elder	200	
James Row	200	
Samuel McClelland	100	
John Hay	200	
John Duncan	200	
William Menzies	200	
James Bowdoun	100	
Hugh Blair	100	
Duncan McIntosh	100	
John Drummond	200	
John Little	100	
Robert Brown	100	
Alexander Anderson	200	
George Drummond	200	
James Boyd	200	
George Hoom(?)	100	
Alexander Brand	100	
John Chancellor	100	
Patrick Aikenhead	100	all described as 'merchants in Edinburgh'.

All sums in sterling. Total: £3,700

(NAS, RD4/59/8. Co-partnership agreement, 11 July and 1 and 3 August 1682).

Gunpowder Company, Cannonmills, Water of Leith, 1703-6

Established in 1696 on land belonging to Heriot's Hospital

Earl Leven for his father and himself	2 shares
Lord Pitmadden	2
Sir Alexander Hope	1
Sir George Hamilton	1
Sir Henry Kells	1
Sir William Hope	1
Sir William Meinzes	1
Alexander Monteith	1
John Watson	1
the heirs of John Drummond	1
Robert Douglas	1
James Balfour (treasurer)	4
the heirs of Bailie Clerk	1
the heirs of Patrick Thomson	1
the heirs of James Rue	1
Sir Alexander Brane	1
James Blackwood	1
James Montomgomerie in Glasgow	1
Col. John Areskin	1
Dean of Guild Brown	1
the heirs of Alexander Gr[hole]	1

(NAS, GD421/5/372. Money due for crop 1703 to crop 1706).

The Company of Scotland trading to Africa and the Indies, 1696

List of subscribers: (all amounts in sterling)

Ad. Cokburne 'for ane hunder lib stg: returned'

John Swinton 'for two hundred pounds: now for three hundred pounds'

Geo Clark 'for five hundred pounds stg.'

R. Blackwood £500

Rot. Watson £500

James Balfour £500

Robert Johnstone £100

John Watson £500 returned

Jo. Watson £500

Alexander Brand £500

Alexr. James and Thos Bayers £500

Jo: Wilkie £500

Pat. Aikenhead £500

Hugh Blair £500

H. Rollo £500

Wm Meinzeis £500 returned

Will. Blackwood £200

Robert Welwood £500

Jo. Dick £500

Andrew Meyrtone £500

Alex. Stevenson £500

John Gray £500

Robert Douglas £300

A. Monteith £200

Patrick Thomson £500

'Subscriptions for Careing one a Trade to the Africa and Indies' from the Balfour of Pilrig papers. Printed by George Pratt Insh in 'The Founders of the Company of Scotland', (*SHR*, xxv, 254).

Scots White Paper Manufacture, 1694 and 1695.

List of subscribers; each share was valued at £3 sterling.

John Earle Tweeddale	20 shares
George Lord Viscount Tarbat	12
John Lord Yester	20
Sir James Stewart Knight	10
Sir Gilbert Eliott Knight	12
John Learmond merchant in Edinburgh	20
Archibald Scott merchant in Edinburgh	10
John Dixon of Edinburgh Gentleman	12
Alexander Clark Jun merchant in Edinburgh	10
Archibald Hume of Edinburgh Gentleman	10
James Hamilton of Edinburgh Gentleman	10
Sir George Campbell Knight	8
Mr. John Buchan advocate	10
John Raitt of Edinburgh, merchant	5
Lawrence Wright writer in Edinburgh	10
John Clarke Master of the Stokinn Manufacture	10
Andrew Johnston of Knockhill	20
David Robertson writer in Edinburgh	20
Thomas Buttler Esquire	6
Captain Allexander Sanderson	10
Thomas Shelton merchant	4
James Stephans Gentleman	10
Mary Glood widdow	4
Mr. Robert Blair Gentleman	10
Mr. James Murray Gentleman	10
George Bell merchant, Edinburgh	5
Nicolas Dupin Esquire	20
Dennis Manes Esquire	20
Mr. James Young writer in Edinburgh	5
Mr. John Menzies Advocate	10
Robert Henderson Gentleman	10
William Hume of St. Abs	5
Andrew Duffe Surveyor to his Majestys Custommes at Ayton in trust for my sone John Duffe	5
John Trotter ffewar in Aytone	5

Thomas Spence writer in Edinburgh	20
William Spence warder of his Majestie's Mint at Edinburgh	20
Mr. James Bailie writer to the Signett	10
Mr. John Inglish writer to the Signett	10
Herman Ledru Gentleman	5
Mr. Andrew Berkley writer in Edinburgh	10
Francis Borie[n?] of the Kings Guairds Gentleman	5
Thomas Noake Gentleman	5
Peter La Fite Gentleman	5
George Mossman Book Seller in Edinburgh	10
Patrick Fermor Merchant in Edinburgh	10
George Livingston Merchant in Edinburgh	10
John Leatham Smith in Edinburgh	10
James Montgomery Jun. Merchant in Glasgow	10
William Barnard Collr. in East Lowthian	10
George Lawson merchant in Edinburgh	10

(NLS, MS.1913. 'Articles of agreement made agreed and concluded upon betweene Nicolas Dupin of the Citty of London Esquire late deputy governour of the Paper and Linnen Manufactures of England Scotland and Ireland and Dennis Manes Esqr. of the One part and other the members and subscribers who shall hereafter be pleased to subscribe and be concerned in Scotland and England for carrying on the Scots White Paper Manufacture through the whole said Kindome of Scotland of the other parte.' 27 Nov 1694).

Brewery in Leith, 1677
Sir James Standsfield
James Brewer, burgess of Edinburgh
Samuel Mcreith, merchant in Edinburgh
Captain John Watson
(NAS, RD2/47/67; RD4/57/264).

Cork cutters, Leith, 1696
Alexander Ainslie, clerk to the glasswork at Leith
Robert Swinton, cork cutter
(NAS, RD14/39/863, box 195. Co-partnership agreement).

Partnership for purchase of tobacco, 1687
James Balfour
William Cross, merchant in Edinburgh
William Seton
(NAS, GD192/21. Contract to buy tobacco from Glasgow, 4 Febuary 1687).

Company for spinning, rolling and buying tobacco, 1702
Andrew Pourie
James Balfour
others unknown
(NAS, RD4/90/86. Dissolution of partnership).

Subscribers to the Bank of Scotland who also had interests in glassworks.
James Balfour, elected director February 1726.
Robert Blackwood, elected director February 1696.
Sir William Binning elected director in April 1697.
John Watson, younger, merchant in Edinburgh, appointed to foundation committee.
Robert Wightman was a director 1717-25.
Patrick Steill vintner, one of the original subscribers.

(BOS, BS1/1/1. List of the Adventurers).

APPENDIX 2: GLASSMAKERS.

Workers known to have been employed in Scottish glasshouses between 1617 and 1750, arranged chronologically by site. The dates given indicate specific references. Men known to have worked in more than one location are shown in bold type.

Unknown locations, 1617-18
Samuel Chaisse
John Maria del Aqua
Bernard Tamerlayne
Robert Scott

Morison's Haven, 1625-46
Leonardo Michellini
Giacomo Lepomanno
Francisco Maxalao
Christopher Farsy (Forcio)
Valeria Biondi
Francisco Biondi
Francisco Ballanato
Giovanni Rigetto
Johne Rousi
Charles Martine
Basteane Nicoll
Johne McAcombla (possibly mis-spelling for John Maria del Aqua)
John Montgomerie

Westpans, 1647-63
Cornelius Visitella, 1647
Jacob Visitella, 1663
? Edward Dagnia 1663

Leith Citadel, 1663-64
Edward Deagney (Dagnia) 1662, 1664
John Dagnia
Edward Dagnia jun.
Matthew Demarin

North Leith, 1678 - 1747
John Ffarquhair glasshouse clerk, 1678
John Warde alias Montgomery, 1678
John Baptista Mercier, 1670s
Daniel Kirby, 1678
John Richards, principal glassmaker, 1678
William Barrow, 1678
James Bristoll - maker or seller of brass moulds
Moses Henzell, 1678
John Leggor
John Hannie
Andrew Newby,
John Davie
?Peter Lart
James Bristol
Richard Shepherd
John Tyzack, 1680s
Philip Taylor (Tyler) Londoner from Dublin, 1687
John Long (Longe) Londoner from Dublin, 1687
James King
Robert Glasgow, 1695
William Brotherstone, servant to Alexander Ainslie
John Dehen (Dehine, Dehew), 1688 - 1694
Isaac Dehew, 1702 - 1711
Richard Townsend, 1702
Hugh ?Mcglye, glassgrinder
Lewis Price, 1706
Lewis Brownhill, 1707
David Philip, 1707
George Kemp, master workman, 1699-1707
Robert Liptrap (Liptwax, Liptrop), 1702
Jacob Visitell (Visitella) 1707
George Taylor, 1709
James Brash, 1717
William Smith, 1717

John Thompson,1718
William Whyte, 1719
Alexander Mckie, 1722
William Black, 1723
John Imrie, 1720s
Thomas Lakeland, 1746
John Marshall, 1746
John Elliot, 1746
Jeremiah Stanford,1747
Thomas Summers, bottle maker, manager and shareholder, 1747
Peter Dods, blacksmith to the glasswork, 1748.
William Tyndal, 1748

Morison's Haven, 1698 - *c.*1728:
Daniel Tittory 1698 - 1707
Daniel Tittory younger
Nathaniel Tittory
Jacob Visitella, 1698, 1707
John Brown, clerk**,** 1698
Edward Hawkes 1699
Thomas Sweet 1699
Robert Liptrap 1700-1707 and again later
Alexander Murdy
Thomas Smith 'master and overseer', bottlemaker
James Thomson
James Wallace
Richard Wightman
John Sym, clerk
James Brass
Michael Colney
James Smith
Thomas Smith, overseer, 1706
Michael Stringer
Rob Colney
James Colney
Isaac Colney
James Love

Rob Spence
John Thomson, 1709, 1722
? Young
? Gardner
Matthew Comb 1715
John Colnott 1721
James McClaren, 1722

Kirkcaldy, 1717 - 1726
George White
John Thomson
Robert Liptrap
James Love

Port Seton, all 1728-34
James King
Thomas Cook
Leonard Biggens
William Bell
Samuel Griffin
John Stannion
Thomas Bate
John Shepherd
William Bees
David Elder
William Parre
Thomas Shule
John Colt
Edward Henderson
William Smith potmaker.
Thomas Smith
William Milne, smith
Trevis, potmaker

Glasgow
Michael Stringer
Rob Colney
James Love
James Colney all 1709
Isaac Colney
Rob Spence

Wemyss:
David Philips, 1712

Sources: OPRs; kirk session records; documents quoted in the text.

APPENDIX 3: THE GLASSWORKS SITES IN 1999.

The following descriptions are based in most cases on personal observation.

Loch Maree

The sites of Sir George Hay's ironworks on Loch Maree, thanks to their isolation, remain undeveloped and have, in fact, been the subject of some archaeological investigation.[1] There are visible remains at Fasagh and Red Smiddy, but no trace of glass making has been found on those sites. In the summer of 1998 a team from Glasgow University (GUARD) undertook a three-week investigation at Letterewe, in the middle of the far shore of the loch and accessible only by boat or on foot. Sadly, despite being aware of the possibility of a glass furnace on the site, no trace of one was uncovered.

Wemyss

Wemyss was the location of a glasshouse in 1621 and again in the early eighteenth century, both of them in what became known as the Glass Cave, situated mid-way between East and West Wemyss. The huge cave, which sheltered the furnace and the kelp pits, partially collapsed in 1902 and has since been demolished and filled with mine waste. Today the adjacent beach is a desert of spoil from the defunct St. Michael colliery and the ridge which used to contain the cave has been reclaimed by nature.(Fig.34).

Kirkcaldy

In Kirkcaldy the name Glasswork Street (Wynd on Wood's plan of 1824 (Fig. 29)) pinpoints the approximate site of the glassworks there. Given that most other glasshouses were very close to the shore, it is likely that it was near to the beach, rather than the High Street. We now know that the glassworks operated from at least 1717 to 1724, probably producing only bottles. Again, disturbance of the areas adjacent to Glasshouse Street, which include Volunteer's Green and several car parks, may well yield evidence in the future.

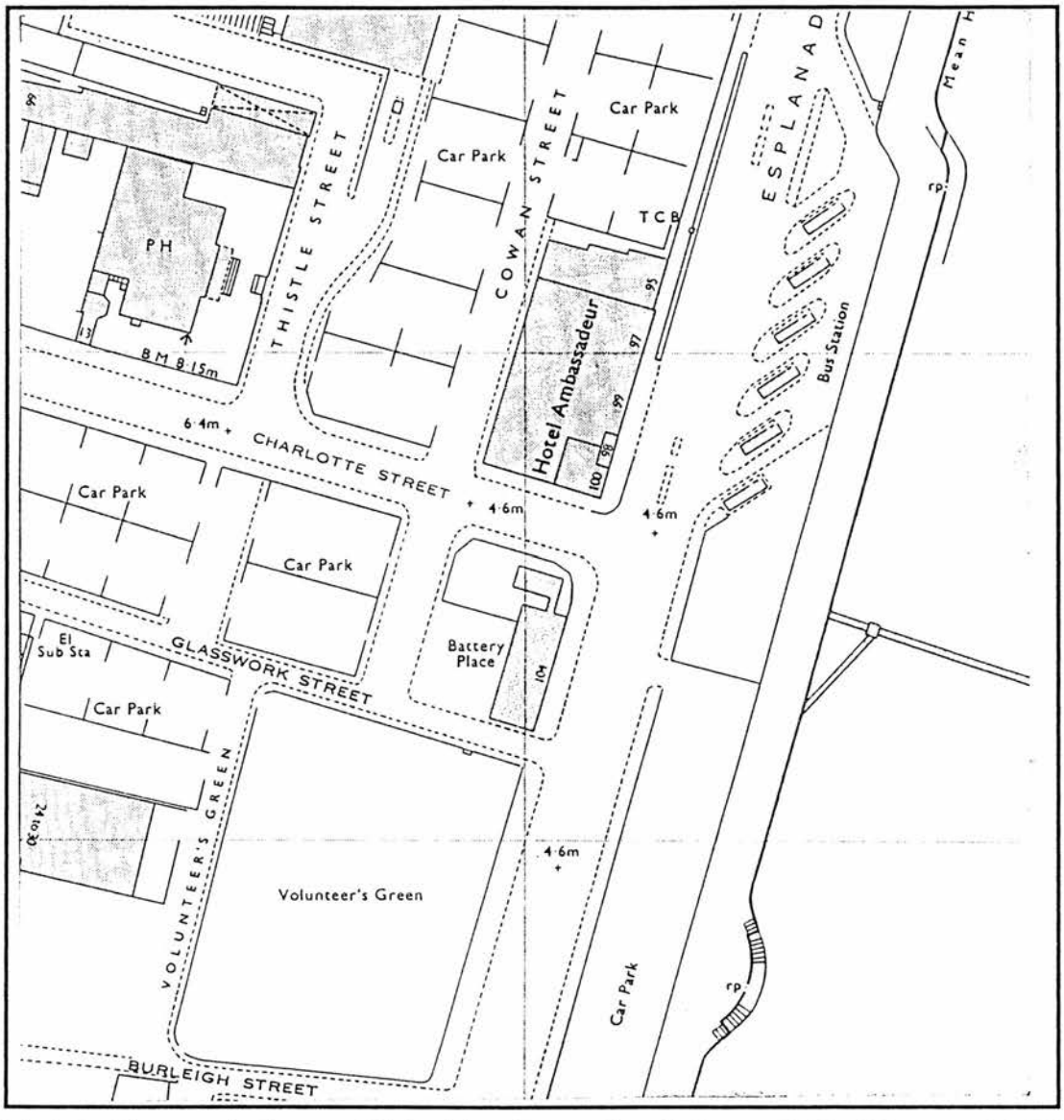


Fig.35. Glasswork Street, Kirkcaldy. (Reproduced from 1975 OS map 1:2500, NT2891SW, by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, Crown copyright Licence No. MC 206A).

Morison's Haven, now known as Prestongrange

Possibly the most interesting of the early glasshouses is the one at Morison's Haven. It was probably the site of Sir George Hay and James Ord's glassworks, which made the drinking glasses exported to London in the 1620s. It is certain that a large group of Italians was working there in the 1630s, making drinking glasses and probably beads, and that they remained until about 1646. At the end of the seventeenth century, two more glasshouses were built on the site, which later became Gordon's pottery. It is not uncommon for one kiln to be built on, or very close to, an older one - if the site was suitable, it was re-used - and there are undoubtedly layers of kiln remains in the area, which lies just outside what is now the Prestongrange Mining Museum. The harbour and whatever remains of the kiln sites lie buried under tons of mine waste, which has been landscaped to form a picnic area and coastal walk. (Fig.36).

Although currently inaccessible, Morison's Haven is certainly one of the crucibles of the Scottish industrial revolution and should be protected, in case investigation ever becomes possible.

Dolphinston

There was also a previously unrecorded, but probably short-lived, glasshouse at Dolphinston, just inland from Morison's Haven, in 1711. The area is at present occupied by a scatter of houses and a farm lying alongside the recently upgraded A1.

Port Seton

Just east of Prestonpans, the Port Seton glasshouse, built by William Adam but apparently never properly completed and with a disastrously faulty roof, was on a site close to the harbour, certainly from 1728 to 1734 and possibly longer. The location was clearly shown on an eighteenth century map (Fig.31). The same area, which is now built up, is shown on the OS map below. (Fig.37).[2] If, at some future date it is subject to further disturbance, it might yield more information.

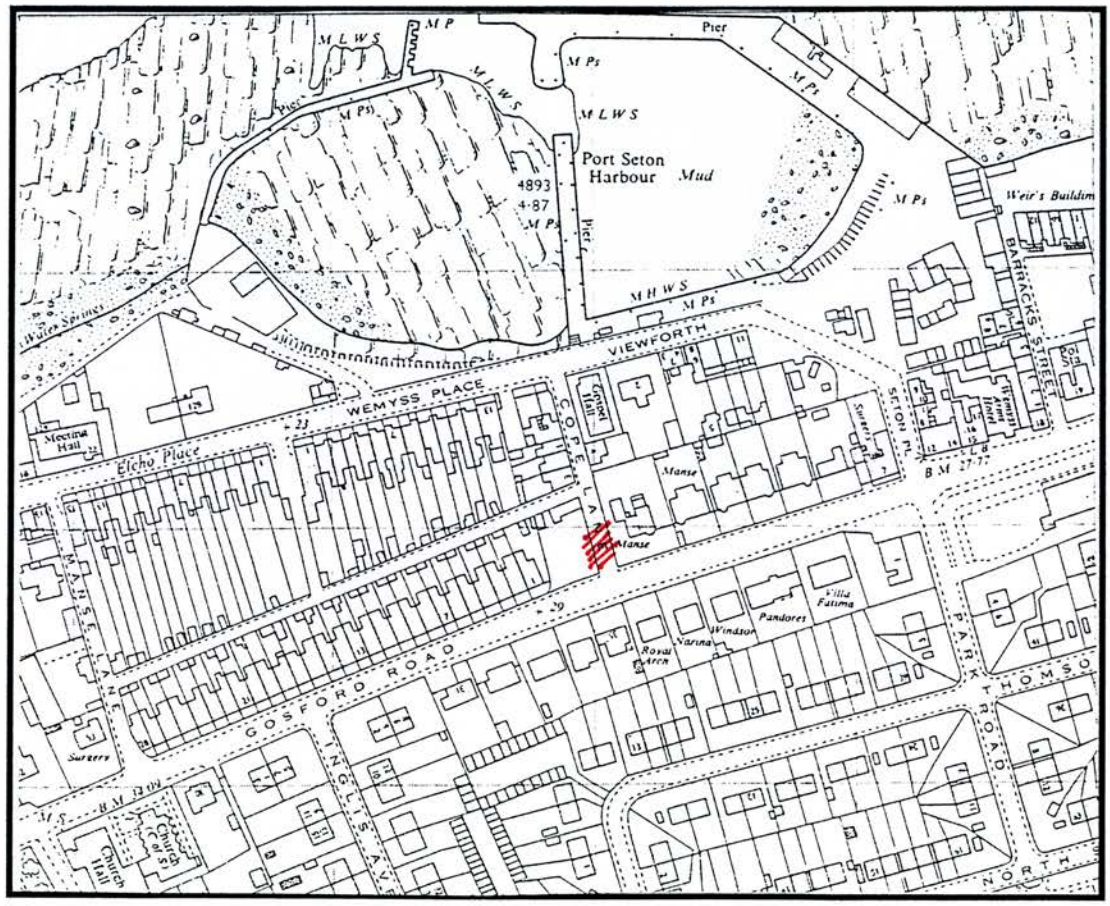


Fig.37. Port Seton Harbour. (Reproduced from OS 1:2500, NT4075-4175, 1968, by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, Crown Copyright Licence No MC 206A. A microfiche update of 1994 confirms the road layout at that date).

Leith

Newhaven

The site of the elusive Newhaven glasshouse was cleared of stone in 1742 and can, in any case, only be guessed at. The land between the village and North Leith was developed during the nineteenth century, and the shore-line altered beyond recognition, while Newhaven was itself the subject of major redevelopment in the 1970s. Despite the lack of knowledge of the precise location, however, any plans for future development at the eastern most end of the old main street of Newhaven should bear in mind the possibility that some evidence of the glasshouse may be found.

Citadel

Of the three glassworks in Leith, the one built in the citadel in 1663, is the most enigmatic. Since the precise location of the glasshouse is unknown, and the area encompassed by the original citadel wall is extensive, any remains of the furnace or other artefacts are likely only to be uncovered incidentally by excavation in the area, although it should be noted as a possible feature of any dig undertaken in that vicinity.

North Leith

Much more information is available concerning the site of the glasshouse at North Leith (1678-*c.*1747), which is at present occupied by a substantial stone building, now flats, known as the Cooperage. The area is clearly shown on late eighteenth century maps, next to the now filled-in dry dock, the outline of which is still clearly visible. The early maps show a block of buildings round three sides of a square set back from the water's edge, on the site previously occupied by the glasshouse. The plot was originally bought by Sir James Standsfield in 1673, the first glasshouse being erected there in 1678. The block shown on the maps was presumably the new building, erected by John Sime after the fire in 1747, which must have covered not only the land on which the earlier tenement stood, but also the yard in which the two glasshouses had been built. Sime's building was demolished, according to Sue Mowat 'at the turn of the century', presumably the nineteenth, since she quotes an eye-witness's description that it had been an 'imposing tenement'.[3]

On the Fergus/Robinson plan of 1759 (Fig.17) a sizeable squared-off inlet is shown on the seaward side of the site. Descriptions of the glasshouse quay, which dated from at least 1673 and probably earlier, suggest, however, that it was on the main river frontage. The sasines, which give what can reasonably be assumed to be the locally

accepted orientation of the area, describe the Water of Leith as the southern boundary of the site,[4] so it is possible to interpret extant contemporary descriptions. In 1691, when the tenement was in a very poor state of repair, the builder agreed to replace the roof timbers: 'the croples [of timber] side upon the north side of the house to be off double t?her length containing eighteen ffoot And the other half upon the south side of the sd house to be of such timber as the roofe shall require...'[5] It appears, therefore, that the original building ran parallel with the river frontage, and that the quay, described in 1691 as 'opposite to the sd. lodging', was built along the main bank. The quay was of stone and was reconstructed in 1691. The two glasshouses, one of which was described as 'wester',[6] (which would confirm the other orientations) stood in the yard behind the dwelling, sheltered by a timber roof (or roofs).

The dwelling itself was substantial, with chimney stacks at either end, a wooden spiral staircase on the north corner and probably four turrets. It also contained cellars with two doors 'next the key' and another at the back of the building, presumably designed for storage of goods and materials. Although the building was burned down in 1747, it is possible that the glasshouses survived to be demolished later, so some evidence of the site may remain. Excavations of the area on the other side of the derelict dry dock, were undertaken by Edinburgh city archaeologists in 1997. The site of John Simes's dry dock itself has been scheduled.[7] Hopefully, if the glassworks site were ever redeveloped, archaeological exploration of the area would be undertaken. In the meantime, since the present building is a linear one, it is possible that some evidence exists under the open space at the back of the block. (Fig.38).

South Leith

The South Leith glasshouse really belongs to the post-1750 period although it was operational from 1747. A second cone was built not many years later (the precise date is unknown, but the land was acquired for a second glasshouse in 1752). Both glasshouses became part of the much larger glassworks which, by the early nineteenth century, boasted a total of seven cones. The site of the three western-most glasshouses of the South Leith complex, on what later became Salamander Street, are indicated on Fig.38. The precise location of the furnaces may not be identical to the earliest constructions there, but are certainly within the same area. During the second half of the eighteenth century more glasshouses were built in Leith, but they are beyond the remit of this thesis.

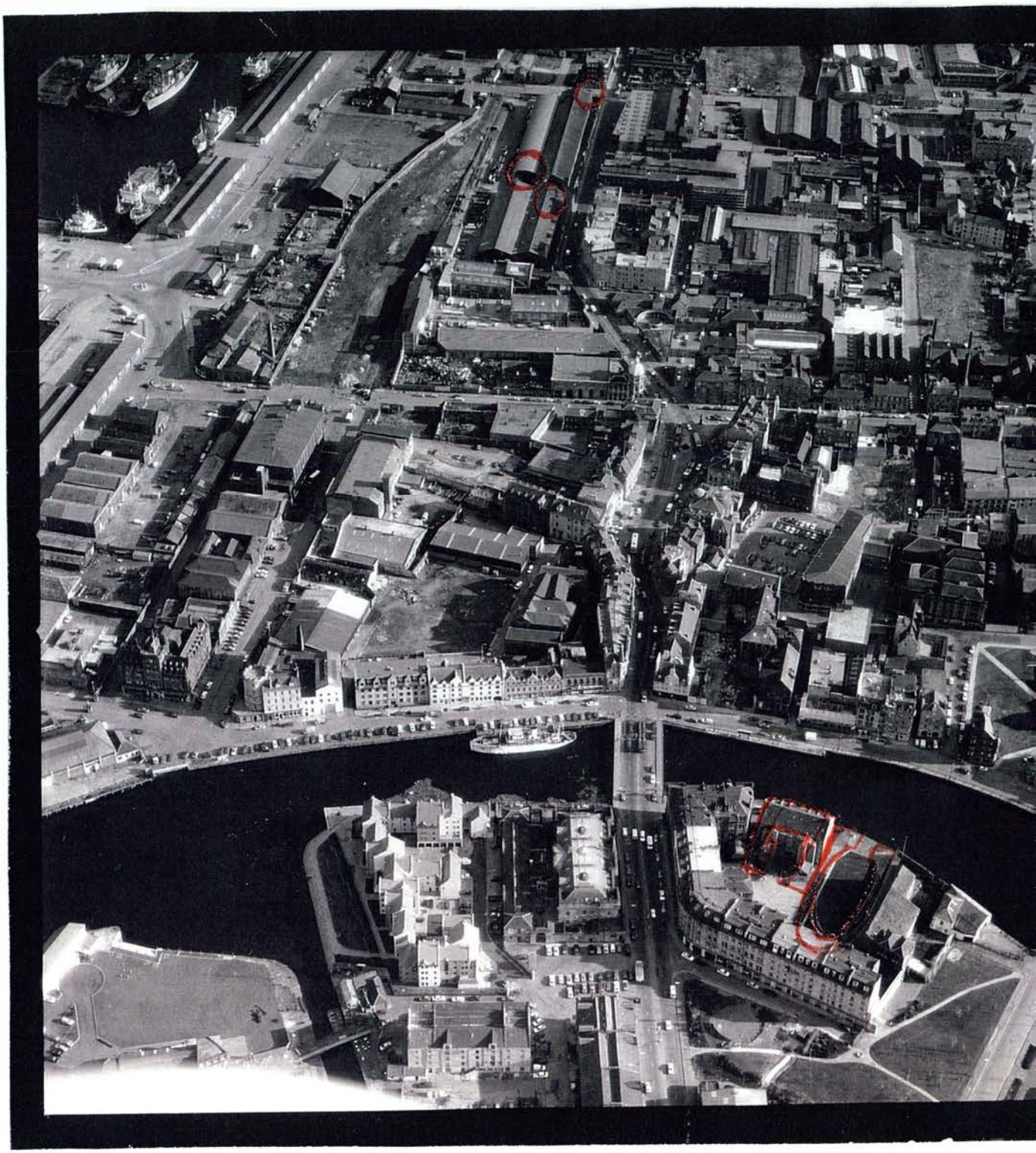


Fig.38. Aerial view of Leith, 1988, showing the site of the North Leith glassworks and the adjacent dry dock. (National Monuments Record No. 55881, copyright RCAHMS). Superimposed is a tracing taken from A. Wood's plan of 1777 (Fig.16), with the site of the glasshouses and tenement outlined in red. Also shown is the site of three glass cones on the South Leith site, traced from Thomson's Plan of Leith, 1827. (NLS)

Glasgow

The Broomielaw site of James Montgomerie's bottle works, was to the east of the present Jamaica Street, on the north bank of the Clyde.(Fig. 32). There are prints from the mid-eighteenth century, which show the glasshouse cone before its collapse in 1792 (Fig. 33) and many more from the nineteenth century, showing the larger later cone, which was demolished in *c.*1834.[8] The whole of Jamaica Street is now heavily built up, the old glassworks site being occupied by the Clyde Hall, a hall of residence, formerly the Royal Stuart Hotel, the Custom House and other buildings. (Fig.39).

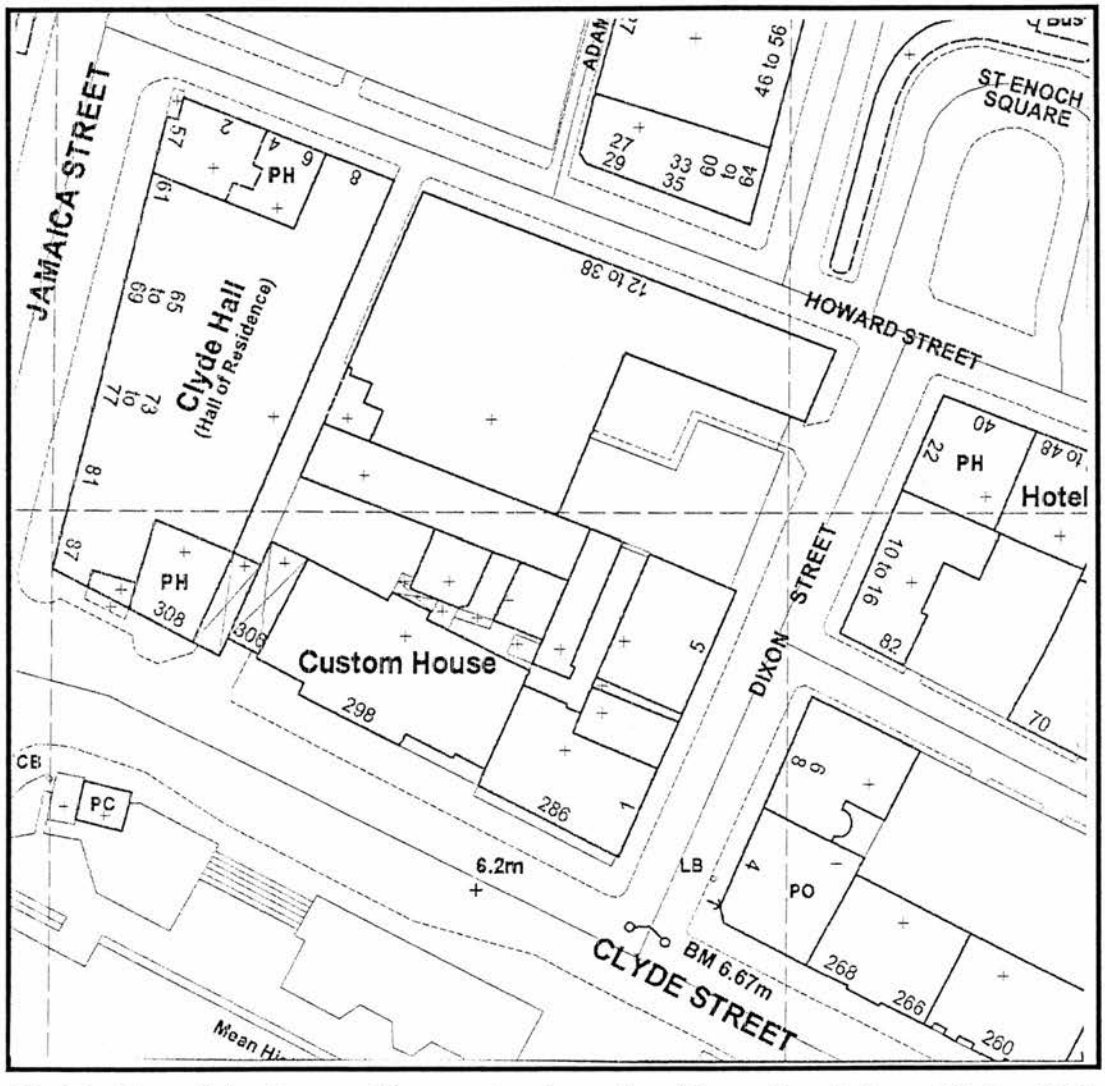


Fig.39. Site of the former Glasgow bottleworks. (Reproduced from OS Land-Line Data, NS5864NE, 1997, by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. Crown Copyright Licence No MC 206A).

Westpans

One excavation which has been done, albeit on a rescue footing, is at Westpans, very close to Morison's Haven, although in the parish of Inveresk. The site of William Littler's porcelain factory is well-known but, like Morison's Haven, Westpans is no longer marked on modern maps. (Figs. 14, 36). In 1741, the adult population was fifty-one.[9] Saltpans were prominent along the shore, and coal was available from the nearby Prestongrange and Pinkie collieries. A plan of the Drummore estate in 1852 shows that the eastern section of the Westpans site lay within the estate boundary, so that is the most likely area for the glassworks.[10]

Today the sea has receded to the distance, behind acres of reclaimed land and the road has been built up and extended, probably covering some of the original pottery site. A short dig in 1990 revealed the expected shards and a ruined kiln base, providing evidence that pottery had been made on the site before Littler moved there in 1764, to make creamware and porcelain. It also became clear that the site had a longer and more complex history, although it was not known at that time that glass was probably made there. However, some crucible shards coated with glass were found in a context pre-dating the 1760s, and it is possible that these could have come from the Visitella period of 1647-1662. There was insufficient time to explore the site fully, and only part of the total area has been examined, but it is now protected under the scheduling procedures. The few crucible shards are inconclusive, but is is hoped that further excavation will take place in the reasonably near future, when the possibility of glass production on the site can be born in mind.

[1] George Haggarty, archaeologist, pers. comm. 1997.

[2] George Haggarty, archaeologist, pers. comm., 1999.

[3] S. Mowat, *Port of Leith*, (Edinburgh, publication undated), 238.

[4] NAS, RS27/110 ff.81-93v.

[5] NLS, DEP. 175 Box 30, bundle 44. No definition of 'crople' has been found.

[6] *ibid*, bundle 45.

[7] Historic Scotland, pers. comm., Jan. 1999.

[8] J. R. Hume, *Industrial Archaeology of Glasgow* (Glasgow, 1974), 52.

[9] NAS, CH2/531/54. List of examinable persons in Musselburgh. Inveresk parish records. My thanks to Sheila Forbes for this information.

[10] WRH, RHP.41334, Plan of the Estate of Drummore, 1852.

GLOSSARY.

Annealing	Gradual cooling of hot glass objects, in order to avoid thermal stress.
Arch	Entrance to the annealing furnace.
Barilla	Ash from marine plant grown in Mediterranean, source of soda for the glass batch.
Batch/mix	Mixture of ingredients prepared for melting.
Blowing iron	Hollow iron rod used for blowing glass.
Broad glass	Window glass made from a flattened cylinder, originating in Lorraine.
Bunch/bundle	Three sheets of broad glass, tied together with straw.
Case	Container holding 24 tables of crown glass, (approximately 120 square feet), or 15 bundles of broad glass, (approximately 180 square feet).
Caulker/Calcar	Oven for fritting (partial fusing) of raw material.
Chair	Glass blower's seat or group of glass blowers working together.
Chist/kist	Container of imported window glass, holding 20 wisps.
Conciator/founder	Man who mixes raw materials and supervises melting of the batch.
Cradle	Alternative term for case of window glass.
Crown glass	Window glass of disc form, 'flashed' from a bubble of glass, originating in Normandy.
Crucible (pot)	Glass making pot made of fireclay
Cullet	Broken glass used in the batch to reduce the melting point.
Decolouriser	Manganese or cobalt oxide, or arsenic, used to neutralise the natural green colour of the glass caused by iron in the batch.

Façon-de-Venise	High quality soda glass made in Venetian style.
Finisher	Man who completed a bottle by adding the neck and rim.
Fire clay	Clay capable of withstanding high temperature, used for crucibles.
Flint glass	Glass containing lead oxide.
Frit	Mixture of partly fused raw materials, ground up and ready for melting.
Gaffer	Master glass-blower or head of chair.
Gather	Gob of molten glass taken from the furnace on a blowing iron or pontil rod.
Green glass	Glass naturally coloured by presence of iron oxide in the batch.
Grog	Pieces of broken crucible, used in clay mix for making new pots.
Hovel	Building containing the furnace and the working area round it.
Kelp	Seaweed burnt to a solid ash, used to provide potash for the batch.
Leer (lehr)	Annealing oven.
Linnet hole	Small flue connecting furnace with annealing oven.
Litharge	Lead monoxide, used for fine glass before 1700.
Lozenge	Diamond-shaped piece of window glass.
Marver	A slab of iron or stone on which the molten glass is rolled after being gathered.
Metal	The fused materials, molten or hard, from which glass is made.
Mould-blown	Glass blown into a mould, taking on its form, and then further blown.
Mortar	Small drinking glass.

Pearl ash	Purified potash.
Play wages	Half-pay given to the workforce while the furnace fire was out, also called 'dead wages'.
Pontil (punty)	Solid iron rod used to hold an object, by means of a blob of glass, while it is being worked.
Pontil mark	Scar left on base of glass object where the pontil rod was attached.
Pucella	An essential tool, shaped like tongs, used for shaping vessels.
Sealed/marked bottle	Bottle marked with blob of glass which is stamped with initials, arms, date etc. of owner, tavern etc..
Servitor	Chief assistant to the gaffer.
Siege	Platform of clay or stone on which the pots rest in the furnace.
Soaper's ash	Residue from soap production, used in bottle making.
Soda glass	Glass containing alkali in the form of soda rather than potash, made in Venice and Britain until 1670s.
Table	Circular sheet of crown glass.
Teaser	Stoker.
Wisp	Term used in Scotland and northern England for a bundle of three sheets of broad window glass.
White glass	Glass containing de-colouriser, used for drinking glasses and other vessels requiring improved transparency.

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2DE Delavel manuscripts.
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GD113	Innes of Stow.
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